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FLOOD INSURANCE STUDY

ORIGINAL

COMPLETED
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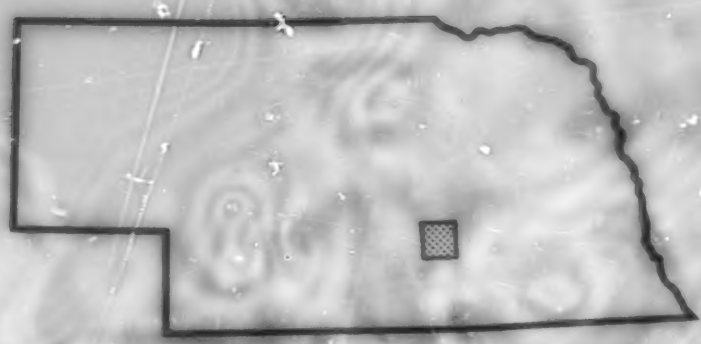
HALL COUNTY, NEBRASKA

UNINCORPORATED AREAS



SEPTEMBER 29, 1986

Federal Emergency Management Agency

COMMUNITY NUMBER - 310100

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Flood Boundary and Floodway Map Index
Flood Boundary and Floodway Map

PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index
Flood Insurance Rate Map

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FLOOD INSURANCE STUDY

HALL COUNTY, UNINCORPORATED AREAS, NEBRASKA

1.0 INTRODUCTION

1.1 Purpose of Study

The purpose of this Type 19 Flood Insurance Study is to investigate the existence and severity of flood hazards in the Unincorporated Areas of Hall County, Nebraska, and to aid in the administration of the Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Initial use of this information will be to revise the Flood Insurance Rate Map developed from data presented in the Type 15 Flood Insurance Study. Further use of the information will be made by local and regional planners in their efforts to promote sound land use and flood plain management. Minimum flood plain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this revised study were performed by Kirkham, Michael and Associates (the Study Contractor) for the Federal Emergency Management Agency (FEMA), under Contract No. EMW-83-C-1192. This study was completed in December 1984.

1.3 Coordination

Community base map selection and the identification of streams requiring detailed study were performed in meetings held in January 1976 attended by personnel of FEMA (formerly the Federal Insurance Administration), the Study Contractor, and officials of the Hall County Board of Supervisors. Hydrologic analyses and flood profiles for the detailed study streams were developed by the Study Contractor in conjunction with available flood data on these streams. In April 1983, the Study Contractor was contracted by FEMA to restudy a 3-mile reach of the Wood River upstream of U.S. Highway 281. At this time, it was also determined that in order to

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accurately define the water-surface profile and provide an orderly pattern of development through Hall County (including the City of Wood River), it was necessary to study an additional 12-mile section of the Wood River not previously studied.

During the course of the work performed by the Study Contractor from 1976 through 1978, flood elevations, flood boundaries, and floodway delineations were reviewed with community officials and with officials of the Nebraska Natural Resources Commission. On October 24, 1978, the results of the work were reviewed and accepted at a final coordination meeting attended by personnel of the Study Contractor, FEMA, the Hall County Board of Supervisors, and Hall County.

During the course of the work performed by the Study Contractor from 1983 through 1984, hydrology, flood elevations, flood boundaries, and floodway delineations were reviewed with community officials, officials of the Nebraska Natural Resources Commission, U.S. Army Corps of Engineers, U.S. Geological Survey (USGS), U.S. Department of Agricultural, Soil Conservation Service (SCS), U.S. Department of the Interior, Bureau of Reclamation, and the Central Platte Natural Resources District.

On October 29, 1985, the results of this Flood Insurance Study were reviewed and accepted at a final coordination meeting attended by representatives of the Study Contractor, FEMA, and the community.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the unincorporated areas of Hall County, Nebraska. The area of study is shown on the Vicinity Map (Figure 1). The incorporated areas within the county were excluded from this study.

Flooding caused by overflow of the Wood River from about 3,000 feet downstream of Shady Bend Road to about 4.5 miles upstream of U.S. Highway 30 was studied in detail.

Flooding caused by overflow of the following sources was studied in detail in the Type 15 Flood Insurance Study for the Unincorporated Areas of Hall County (Reference 1) and has been included in this study:

a. Middle Channel Platte River, from the mouth to the western county boundary;

b. South Channel Platte River, from about 0.3 mile downstream of State Highway 12 to the divergence from the Middle Channel Platte River;

c. Prairie Creek, from about 1.6 miles upstream of U.S. Highway 281 to just upstream of County Road Bridge No. 8;

d. Silver Creek, from about 0.88 mile downstream of U.S. Highway 281 to about 2.03 miles upstream of County Road Bridge No. 8; and

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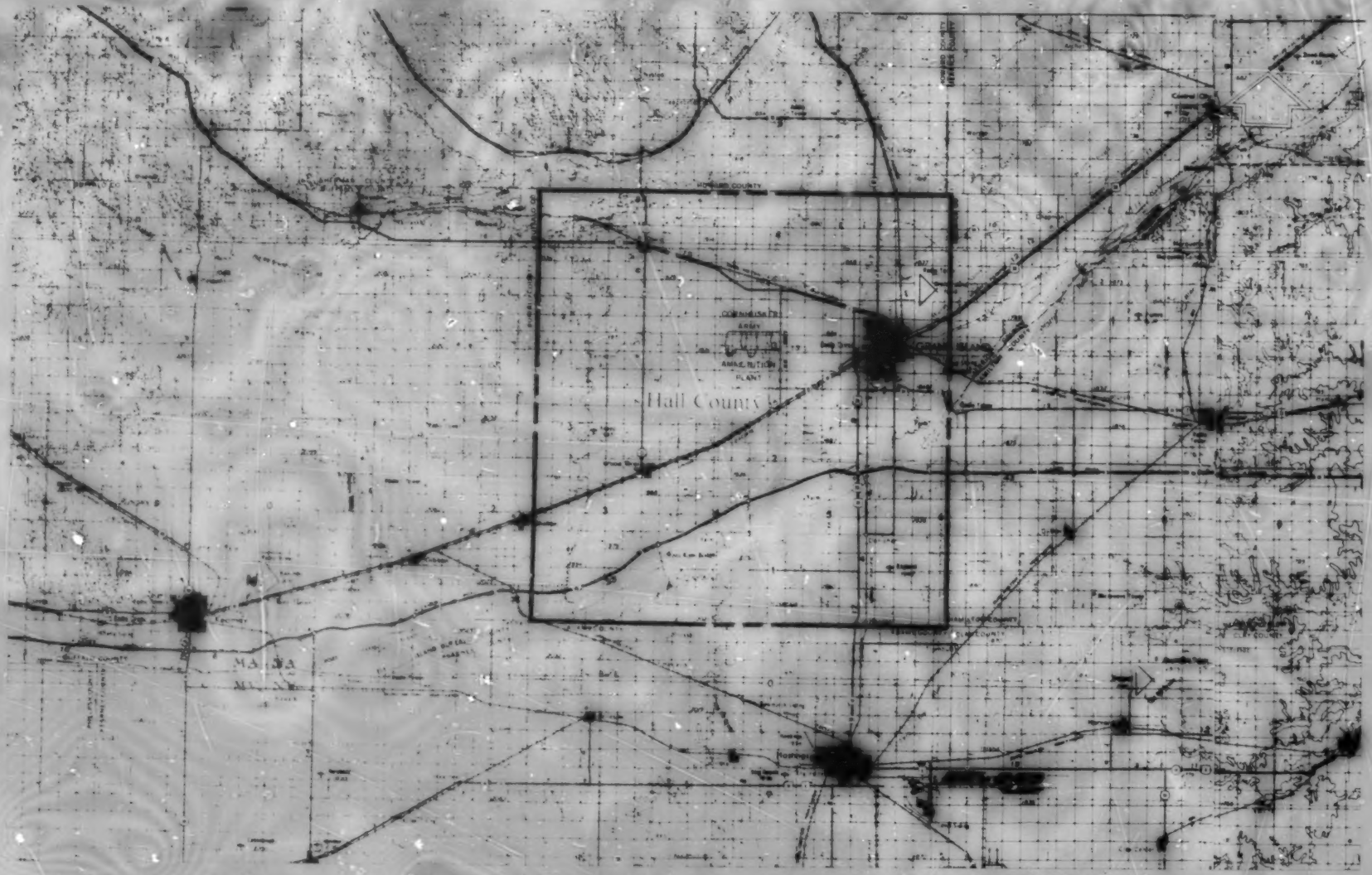

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE

(UNINCORPORATED AREAS)

APPROXIMATE SCALE

8 0 8 16 24 MILES

VICINITY MAP

e. Moores Creek, from about 1.84 miles downstream of U.S. Highway 281 to about 0.55 mile upstream of U.S. Highway 281.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards.

The areas studied were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through December 1989. The scope and methods of study were proposed to and agreed upon by FEMA and Hall County.

2.2 Community Description

Hall County is located in south-central Nebraska, and is bordered by Howard County on the north, Buffalo County on the west, Adams County on the south, Hamilton County on the southeast, and Merrick County on the northeast. Hall County is essentially an agricultural region. Its principal city is Grand Island, the third largest city in the state. Other communities located in Hall County are the City of Wood River and the Villages of Cairo, Doniphan, and Alda. In 1980, the population of Hall County was reported to be 47,690 (Reference 2).

The topography of the area is extremely flat in relation to the drainage courses making it difficult to identify a definite flood plain in many locations (Reference 3). The soil of Hall County is composed of equal amounts of silt and sand that contribute to the large sediment loads carried by streams in the area. The soil in this area supports a variety of native grasses on uncultivated land, along with an assortment of trees distributed along streambanks.

The climate of Hall County is continental in character, with generally low humidity, relatively low annual rainfall, and wide extremes in temperature. The average annual rainfall for 74 years of record for the county is 25 inches, compared to a maximum annual rainfall of 45.85 inches and a minimum annual rainfall of 11.91 inches (Reference 4).

Development of the land adjacent to the detailed study streams is essentially centered in the Grand Island area with the majority designated for residential use. Due to the limited amount of available land that would not be susceptible to flooding, a large amount of land designated for future development is located in stream overflow areas. At the present time, there is no development within the flood plain of the streams studied in detail.

2.3 Principal Flood Problems

The low-lying areas of Hall County are subject to periodic flooding caused by overflow of the Platte River, the Wood River, Prairie Creek, Silver Creek, and Moores Creek. Flooding occurred in Hall County in June 1947, June 1949, June 1967, and June 1971.

2.4 Flood Protection Measures

The Platte River is a controlled discharge stream due to the construction of Lake McConaughy and several other reservoirs located on the North Platte River in Colorado and Wyoming. Lake McConaughy and the other reservoirs have no impoundment effect upon the 100-year flood. At the present time, there are no major flood protection structures in operation on either the Wood River, Prairie Creek, Silver Creek, or Moores Creek.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10. 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each riverine flooding source studied in detail affecting the community.

The frequency-discharge information for the Platte River was taken from a report entitled, "Magnitude and Frequency of Floods in Nebraska," using regional characteristics (Reference 5).

The frequency-discharge information for Prairie Creek and Silver Creek was computed by utilizing regional information developed in the USGS report for Nebraska (Reference 5) in conjunction with the SCS computer program TR-20 (Reference 6). Due to a mixing of flows between Prairie, Silver, and Moores Creeks, an attempt was made to determine the extent to which the base flows along each of the streams was affected due to this mixing. Results of the elevations associated with discharges were compared to elevations shown on USGS topographic maps (Reference 7).

The frequency-discharge information for Moores Creek was computed by applying regional data on runoff characteristics to a unit hydrograph generated from a formula developed by the SCS (Reference 8).

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The revised frequency-discharge information for the Wood River between U.S. Highway 281 and the confluence of North Channel Platte River was taken from a previous Flood Insurance Study for the City of Grand Island (Reference 9). Frequency-discharge data for this reach were developed from data generated at the Alda gage located upstream. Alda gage data were then adjusted based on a method of proportional drainage area in order to make allowances for increased contributing drainage areas in the downstream study reaches.

The revised frequency-discharge information for the Wood River upstream of the confluence of North Channel Platte River was computed using gage data recorded by the USGS at the Alda gage on the Wood River, upstream of the City of Grand Island. Frequency-discharge curves were developed based on a period of record from 1954 through 1983. A low annual peak of 15 cubic feet per second (cfs), which occurred in 1981, was deleted from the remainder of these data. A log-Pearson Type III analysis was used to develop frequency-discharge curves (Reference 10).

Peak discharges for the 10-, 50-, 100-, and 500-year floods of each flooding source studied in detail in the community are shown in Table 1.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Cross-section data were obtained by field measurement. All bridges and culverts were surveyed to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles. For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the Flood Boundary and Floodway Map.

Roughness coefficients (Manning's "n") for the detailed study streams were estimated by field inspection. The coefficients range from 0.040 in the channel section to 0.060 in the overbank areas.

Starting water-surface elevations were developed using previous downstream study work (Reference 9). Water-surface profiles were developed using a HEC-2 step-backwater computer model (Reference 11).

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals. In cases where the 50- and 100-year flood elevations are close together, due to limitations of the profile scale, only the 100-year profile has been drawn.

The hydraulic analyses for this study are based only on the effects of unobstructed flow. The flood elevations shown on the profiles are, thus, considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

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TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA SQ MILES	PEAK DISCHARGES (CFS) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
PLATTE RIVER					
at State Highway 2	62,800	17,000	32,000	39,000	54,000
WOOD RIVER					
just upstream of U.S. Highway 281	704	1,400	2,350	2,750	3,700
about 3,000 feet upstream of County Road Bridge No. 2	628	1,030	1,660	1,930	2,550
PRAIRIE CREEK					
about 1.6 miles upstream of U.S. Highway 281	143	3,000	4,600	5,300	9,200
just upstream of County Road Bridge No. 8	132	3,000	3,900	4,100	4,700
SILVER CREEK					
just downstream of County Road Bridge No. 1	67	1,600	1,700	2,500	4,100
just downstream of the Burlington Northern Railroad	66	2,600	2,800	3,600	6,500
about 0.6 mile upstream of County Road Bridge No. 5	63	1,800	1,800	1,800	1,800
just upstream of U.S. Government Railroad	63	3,600	5,300	6,300	9,100
MOORES CREEK					
just upstream of County Road 141	4.2	2,300	3,600	5,400	6,700

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All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages state and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study produces maps designed to assist communities in developing flood plain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year flood plain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24000, enlarged to a scale of 1:12000, with a contour interval of 5 feet (Reference 3).

For the streams studied by approximate methods, only the 100-year flood plain boundary was delineated using the previously published Type 15 Flood Insurance Study for Hall County (Reference 1).

The 100- and 500-year flood plain boundaries are shown on the Flood Boundary and Floodway Map. In cases where the 100- and 500-year flood plain boundaries are close together, only the 100-year flood plain boundary has been shown. Small areas within the flood plain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on flood plains, such as structures and fill, reduces the flood-carrying capacity, increases the flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood plain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plain. The results of these computations were tabulated at selected cross sections for each stream segment for which a floodway was computed and are presented in Table 2, Floodway Data.

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
WOOD RIVER								
A	97,000	1200[2]	6359	0.4	1870.3	1870.3	1871.3	1.0
B	98,650	2000	3104	0.9	1870.4	1870.4	1871.4	1.0
C	100,250	1700	2108	1.3	1872.8	1872.8	1873.2	0.4
D	102,550	2396	2476	1.1	1873.7	1873.7	1874.4	0.7
E	103,374	2134	752	3.7	1874.1	1874.1	1874.9	0.8
F	103,524	2400	2136	1.3	1874.6	1874.6	1875.3	0.7
G	107,274	2000	1656	1.7	1878.8	1878.8	1879.7	0.9
H	109,664	1800	2446	1.1	1882.0	1882.0	1882.8	0.8
I	110,464	1800	996	2.8	1883.5	1883.5	1883.9	0.4
J	110,488	1800	2056	1.3	1883.5	1883.5	1884.3	0.8
K	110,688	1800	2049	1.3	1884.5	1884.5	1884.7	0.2
L	113,488	1200	2180	1.3	1886.3	1886.3	1887.1	0.8
M	115,613	1500	1362	2.0	1888.4	1888.4	1888.9	0.5
N	116,363	1000	1443	1.9	1890.0	1890.0	1890.2	0.2

[1]FEET ABOVE MOUTH
[2]THIS WIDTH EXTENDS WITHIN EXTRATERRITORIAL LIMITS

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE

(UNINCORPORATED AREAS)

FLOODWAY DATA

WOOD RIVER

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
MIDDLE CHANNEL PLATTE RIVER								
A	0.89	1600	5274	2.24	1843.6	1843.6	1844.0	0.4
B	1.86	1420	3010	3.93	1849.0	1849.0	1850.0	1.0
C	2.73	1368	3877	3.05	1856.4	1856.4	1856.9	0.5
D	3.35	500	2452	4.82	1859.3	1859.3	1860.3	1.0
E	4.68	550	2825	4.18	1869.6	1869.6	1869.7	0.1
F	4.77	1100	4447	2.66	1870.0	1870.0	1870.1	0.1
G	5.22	600	3825	3.09	1871.0	1871.0	1871.5	0.5
H	5.47	700	3609	3.27	1872.7	1872.7	1873.5	0.8
I	6.21	380	3128	3.78	1880.2	1880.2	1881.1	0.9
J	7.29	399	2303	5.13	1885.0	1885.0	1885.6	0.6
K	8.30	858	2371	4.98	1890.8	1890.8	1890.8	0.0
L	9.13	1921	4231	2.79	1897.9	1897.9	1898.0	0.1
M	9.47	3343	4410	2.68	1900.6	1900.6	1900.6	0.0
N	10.55	2531	5719	2.07	1906.2	1906.2	1906.4	0.2
O	11.13	852	2199	5.37	1909.9	1909.9	1910.0	0.1
P	12.55	469	2562	4.61	1920.7	1920.7	1921.0	0.3
Q	12.92	580	3073	3.85	1922.8	1922.8	1923.4	0.6
R	14.35	598	1829	6.46	1931.4	1931.4	1931.9	0.5
S	15.49	900	3507	3.37	1940.6	1940.6	1941.2	0.6
T	15.98	713	2898	4.08	1943.3	1943.3	1944.0	0.7
U	16.87	900	3846	3.07	1949.0	1949.0	1950.0	1.0
V	17.57	497	2029	5.82	1954.5	1954.5	1954.8	0.3
W	18.04	1200	5117	2.31	1956.9	1956.9	1957.4	0.5
X	18.32	1310	5079	2.33	1961.6	1961.6	1961.8	0.2
Y	19.48	1978	15,012	2.60	1966.6	1966.6	1967.5	0.9
Z	20.41	1949	8609	4.53	1973.5	1973.5	1974.0	0.5

[1] MILES ABOVE U.S. HIGHWAY 34

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE

(UNINCORPORATED AREAS)

FLOODWAY DATA

MIDDLE CHANNEL PLATTE RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
MIDDLE CHANNEL PLATTE RIVER								
AA	21.32	1826	12,688	3.08	1979.2	1979.2	1979.6	0.4
AB	22.02	1049	7822	4.99	1984.2	1984.2	1985.0	0.8
AC	22.83	2219	14,916	2.61	1990.4	1990.4	1991.3	0.9
AD	23.34	2606	11,589	3.37	1993.3	1993.3	1994.3	1.0
AE	24.25	1958	9666	4.03	1999.5	1999.5	2000.0	0.5
AF	24.89	1170	11,163	3.49	2003.4	2003.4	2003.7	0.3
AG	25.40	1807	10,997	3.55	2006.1	2006.1	2007.0	0.9
AH	25.93	1271	6897	5.65	2009.7	2009.7	2010.4	0.7

[1]MILES ABOVE U.S. HIGHWAY 34

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE

(UNINCORPORATED AREAS)

FLOODWAY DATA

MIDDLE CHANNEL PLATTE RIVER

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
SOUTH CHANNEL PLATTE RIVER								
A	1.47	2094	6891	3.94	1844.4	1844.4	1844.4	0.0
B	2.49	2226	7680	3.53	1850.5	1850.5	1850.5	0.0
C	3.42	800/1032[2]	3772	5.10	1857.0	1857.0	1857.0	0.0
D	4.44	2100/1100[2]	3852	3.57	1863.0	1863.0	1863.1	0.1
E	4.99	1500/1075[2]	1609	2.91	1865.2	1865.2	1865.3	0.1
F	5.54	2000/1030[2]	1607	2.91	1868.2	1868.2	1868.5	0.3
G	6.20	1800/1080[2]	2180	4.86	1871.5	1871.5	1872.2	0.7
H	7.59	4100/ 600[2]	1360	1.04	1879.0	1879.0	1879.0	0.0
I	8.06	1200/1099[2]	8302	3.27	1883.0	1883.0	1883.5	0.5
J	9.01	962/ 800[2]	4567	4.61	1888.3	1888.3	1889.3	1.0
K	10.13	2100/ 992[2]	3829	5.37	1897.2	1897.2	1897.2	0.0
L	11.22	1600/2000[2]	3559	3.41	1904.5	1904.5	1905.1	0.6
M	11.90	600/1047[2]	3120	5.45	1908.5	1908.5	1909.2	0.7
N	12.87	1630	7740	3.51	1914.6	1914.6	1915.6	1.0
O	13.89	1180	5553	4.90	1920.7	1920.7	1921.0	0.3
P	14.34	1040	3797	7.16	1925.6	1925.6	1925.7	0.1
Q	14.55	800	7521	2.28	1928.0	1928.0	1928.7	0.7
R	14.83	2650	13,764	1.98	1928.7	1928.7	1929.2	0.5
S	15.57	1404	3154	8.61	1930.8	1930.8	1930.8	0.0
T	16.63	2033	9516	2.85	1938.2	1938.2	1938.4	0.2
U	17.60	1250	2795	9.72	1943.8	1943.8	1943.8	0.0
V	18.82	700	5328	5.10	1952.0	1952.0	1952.9	0.9
W	19.60	880	4985	5.45	1955.7	1955.7	1956.4	0.7
X	20.04	800	5303	5.12	1958.4	1958.4	1958.9	0.5
Y	20.34	800	5282	5.14	1961.1	1961.1	1961.5	0.4

[1]MILES ABOVE LIMIT OF FLOODING AFFECTING COMMUNITY (0.60 MILE DOWNSTREAM OF U.S. HIGHWAY 34)
[2]FLOODWAY WIDTH OF RIGHT CHANNELS COMBINED/FLOODWAY WIDTH OF LEFT CHANNEL (FACING UPSTREAM)

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

FLOODWAY DATA

SOUTH CHANNEL PLATTE RIVER

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
PRAIRIE CREEK								
A	1.60	1700/1407[2]	3107	0.61	1860.5	1860.5	1860.5	0.0
B	1.65	1800/600[2]	2145	0.40	1861.1	1861.1	1861.7	0.6
C	4.02	650/1350[2]	2000	3.64	1865.8	1865.8	1865.8	0.0
D	4.08	1000/1400[2]	2400	0.56	1869.7	1869.7	1869.8	0.1
E	4.68	900/533[2]	1433	4.19	1870.4	1870.4	1870.4	0.0
F	5.44	500/361[2]	861	1.94	1873.1	1873.1	1873.8	0.7
G	5.50	750/200[2]	950	1.64	1873.5	1873.5	1874.3	0.8
H	6.48	300/236[2]	536	2.83	1875.8	1875.8	1876.1	0.3
I	7.31	400/875[2]	1275	1.77	1879.1	1879.1	1879.4	0.3
J	7.46	900/177[2]	1077	2.94	1880.7	1880.7	1881.5	0.8
K	9.31	1250/200[2]	1450	0.96	1884.3	1884.3	1884.3	0.0
L	10.03	600/192[2]	792	5.38	1886.9	1886.9	1887.9	1.0
M	10.09	1100/383[2]	1463	1.47	1889.1	1889.1	1890.1	1.0
N	10.54	350	842	6.29	1890.0	1890.0	1890.5	0.5
O	11.16	605	2010	2.04	1894.6	1894.6	1895.3	0.7
P	11.33	1094	4192	0.98	1895.3	1895.3	1896.0	0.7
Q	11.40	1210	5034	0.81	1895.8	1895.8	1896.0	0.2
R	11.59	1185	4021	1.02	1896.3	1896.3	1896.9	0.6
S	12.16	809	1483	2.76	1897.1	1897.1	1897.7	0.6
T	12.61	964	1801	2.28	1898.5	1898.5	1899.2	0.7
U	13.57	588	2091	1.96	1900.9	1900.9	1901.9	1.0

[1]MILES ABOVE U.S. HIGHWAY 281
[2]FLOODWAY WIDTH OF RIGHT CHANNEL/FLOODWAY WIDTH OF LEFT CHANNEL (FACING UPSTREAM)

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE

(UNINCORPORATED AREAS)

FLOODWAY DATA

PRAIRIE CREEK

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
SILVER CREEK								
A	0.94	2150	9180	0.27	1855.0	1855.0	1855.5	0.5
B	1.76	2409	7261	0.34	1855.1	1855.1	1855.8	0.7
C	1.88	2410	13,084	0.19	1858.2	1858.2	1858.2	0.0
D	2.63	300	356	7.02	1858.2	1858.2	1858.2	0.0
E	3.38	1100	2440	1.02	1863.4	1863.4	1863.6	0.2
F	3.34	1100	2537	0.99	1863.7	1863.7	1863.8	0.1
G	3.94	433	1214	2.97	1865.0	1865.0	1865.6	0.6
H	5.21	2401[2]	4763	0.76	1868.8	1868.8	1869.3	0.5
I	5.83	191	352	5.11	1870.4	1870.4	1870.9	0.5
J	6.69	640	1227	1.47	1874.6	1874.6	1875.0	0.4
K	6.75	540	1292	1.39	1874.9	1874.9	1875.4	0.5
L	6.87	1200	2062	0.87	1875.7	1875.7	1876.1	0.4
M	7.19	1407	3729	1.69	1876.5	1876.5	1877.4	0.9
N	7.24	1495	6324	1.00	1879.1	1879.1	1879.4	0.3
O	7.87	1200	2992	2.11	1879.8	1879.8	1880.7	0.9
P	8.41	1157	3616	1.74	1882.2	1882.2	1883.2	1.0
Q	8.47	928	2271	2.77	1884.2	1884.2	1884.2	0.0
R	9.05	2743	2227	1.95	1885.1	1885.1	1886.1	1.0
S	9.58	1408	1751	3.60	1888.5	1888.5	1888.5	0.0
T	10.33	1000	3019	2.09	1890.2	1890.2	1890.7	0.5
U	10.38	1508	7893	0.80	1892.8	1892.8	1893.6	0.8
V	11.09	280	1361	3.82	1893.3	1893.3	1984.2	0.9
W	11.57	450	1476	3.52	1896.3	1896.3	1897.2	0.9

[1] MILES ABOVE COUNTY ROAD 141
[2] THIS WIDTH EXTENDS WITHIN AREA NOT INCLUDED

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE

(UNINCORPORATED AREAS)

FLOODWAY DATA

SILVER CREEK

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
MOORES CREEK								
A	0.02	2481	5992	1.07	1846.6	1846.6	1847.3	0.7
B	0.62	1038	3221	1.97	1848.7	1848.7	1849.7	1.0
C	1.30	1087	3273	1.96	1852.2	1852.2	1853.2	1.0
D	1.68	1218	5007	1.29	1853.7	1853.7	1854.4	0.7
E	1.92	1540	5774	1.11	1857.0	1857.0	1857.7	0.7
F	2.26	940	1815	2.98	1858.3	1858.3	1858.8	0.5

[1]MILES ABOVE COUNTY ROAD 141

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE

(UNINCORPORATED AREAS)

FLOODWAY DATA

MOORES CREEK

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As shown on the Flood Boundary and Floodway Map, the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and the 100-year flood plain boundaries are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and the 100-year flood plain boundaries is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

No floodway was computed for the Wood River upstream of County Road Bridge No. 2.

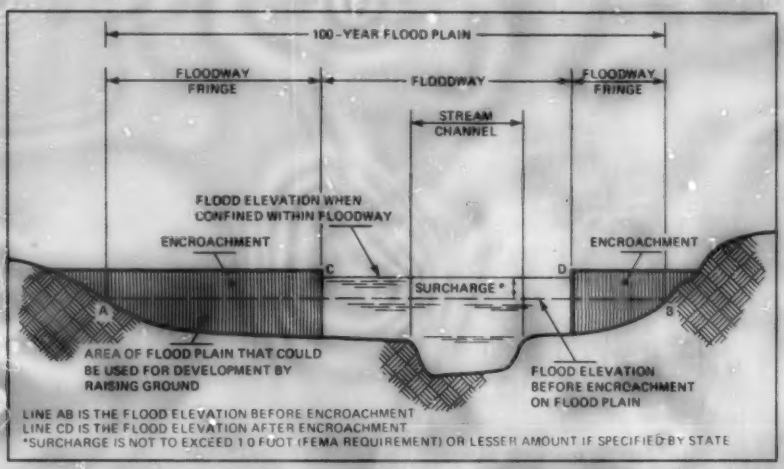
100-YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE *
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE AB IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE CD IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE IS NOT TO EXCEED 1.0 FUOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE

FIGURE 2 - Floodway Schematic

The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

5.0 INSURANCE APPLICATION

To establish actuarial insurance rates, data from the engineering study must be transformed into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source studied in detail affecting Hall County.

5.1 Reach Determinations

Reaches are defined as sections of flood plain that have relatively the same flood hazard, based on the weighted average difference in water-surface elevations between the 10- and 100-year floods. This difference may not have a variation greater than that indicated in the following table for more than 20 percent of the reach:

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Average Difference Between 10- and 100-year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the riverine flooding sources of Hall County are shown on the Flood Profiles and are summarized in Table 3, Flood Insurance Zone Data.

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is used to establish relationships between depth and frequency of flooding in any reach. This relationship is then used with depth-damage relationships for various classes of structures to establish actuarial insurance rate tables.

The FHF for a riverine reach is the weighted average difference between the 10- and 100-year flood water-surface elevations rounded to the nearest 0.5 foot, multiplied by 10, and shown as a 3-digit code. For example, if the difference between elevations is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference is greater than 10.0 feet, it is rounded to the nearest whole foot.

5.3 Flood Insurance Zones

Flood insurance zones and zone numbers are assigned based on the type of flood hazard and the FHF, respectively. A unique zone number is associated with each possible FHF and varies from 1 for a FHF of 005 to a maximum of 30 for a FHF of 200 or greater.

Zone A: Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations are shown or FHFs determined.

Zones A2, A3: Special Flood Hazard Areas inundated by the 100-year flood, with base flood elevations shown, and zones subdivided according to FHFs.

Zone B: Areas between the Special Flood Hazard Areas and the limits of the 500-year flood; areas that are protected from the 100- and 500-year floods by dike, levee, or other water control structure; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and, areas subject to 100-

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year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.

Zone C: Areas of minimal flooding; not subdivided.

Flood elevation differences, FHFs, flood insurance zones, and base flood elevations for each flooding source studied in detail in the community are shown in Table 3, Flood Insurance Zone Data.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for Hall County is, for insurance purposes, the principal product of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines for riverine flooding sources show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. The base flood elevations and zone numbers are used by insurance agents, in conjunction with structure elevations and characteristics, to assign actuarial insurance rates to structures and contents insured under the National Flood Insurance Program.

6.0 OTHER STUDIES

Flood Insurance Studies have been published for the Villages of Alda, Doniphan, and Cairo and the Cities of Grand Island and Wood River (References 12-16). Those studies are in agreement with this report.

Due to its more detailed analysis, this Flood Insurance Study supersedes the previously published Type 15 Flood Insurance Study for the Unincorporated Areas of Hall County (Reference 1).

7.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, Old Federal Office Building, Room 300, 911 Walnut Street, Kansas City, Missouri 64106.

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION[3] (FEET NGVD)
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
WOOD RIVER							
REACH 1	0100	−0.8	−0.2	0.3	010	A2	VARIES—SEE MAP
REACH 2	0075,0100	−1.5	−0.4	0.7	015	A3	VARIES—SEE MAP
MIDDLE CHANNEL PLATTE RIVER							
REACH 1	0100,0125,0150	−1.5	−0.4	0.6	015	A3	VARIES—SEE MAP
SOUTH CHANNEL PLATTE RIVER							
REACH 1	0100,0125,0150	−1.4	−0.5	0.6	015	A3	VARIES—SEE MAP
SILVER CREEK							
REACH 1	0050	−0.9	−0.4	0.5	010	A2	VARIES—SEE MAP
PRAIRIE CREEK							
REACH 1	0025,0050	−0.9	−0.3	0.5	010	A2	VARIES—SEE MAP
MOORES CREEK							
REACH 1	0050	−0.9	−0.6	0.3	010	A2	VARIES—SEE MAP

[1]FLOOD INSURANCE RATE MAP PANEL
[2]WEIGHTED AVERAGE
[3]ROUNDED TO NEAREST FOOT

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

WOOD RIVER—MIDDLE CHANNEL PLATTE RIVER—SOUTH CHANNEL PLATTE RIVER —SILVER CREEK—PRAIRIE CREEK—MOORES CREEK

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8.0 REFERENCES AND BIBLIOGRAPHY

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2. U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, Number of Inhabitants, Nebraska, Washington, D.C., December 1981.

3. U.S. Geological Survey, 7.5 Minute Series Topographic Maps, Scale 1:24000, Contour Interval 5 feet: Boelus, 1953; Danneborg, 1953; St. Paul S.W., 1961; St. Libory, 1961; Cameron, 1962; Shelton, 1962; Abbott, 1962; Grand Island, 1962; Wood River, 1962; Alda, 1962; Doniphan, 1962; Denman, 1962; Prosser, 1962.

4. U.S. Army Corps of Engineers, Flood Plain Information Report, Wood River, Grand Island, Nebraska, August 1964.

5. U.S. Geological Survey, Water Resources Investigation 76-109, Magnitude and Frequency of Floods in Nebraska, E.W. Beckman, October 1976.

6. U.S. Department of Agriculture, Soil Conservation Service, Engineering Division, Technical Release No. 20, Computer Program for Project Formulation, Hydrology, May 1965.

7. U.S. Geological Survey, Topographic Maps of June 1967, Scale 1:24000, Contour Interval 5 feet: Grand Island, Nebraska, 1975.

8. U.S. Department of Agriculture, Soil Conservation Service, Technical Release No. 55, Urban Hydrology for Small Watersheds, January 1975.

9. Federal Emergency Management Agency, Flood Insurance Study, City of Grand Island, Hall County, Nebraska, September 1982.

10. Interagency Advisory Committee on Water Data, Bulletin No. 17B Guidelines for Determining Flood Flow Frequency, 1981.

11. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water-Surface Profiles Generalized Computer Program, Davis, California, November 1976.

12. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Insurance Study, Village of Alda, Hall County, Nebraska, June 1978.

13. ---------, Federal Insurance Administration, Flood Insurance Study, Village of Doniphan, Hall County, Nebraska, August 1978.

14. ---------, Federal Insurance Administration, Flood Insurance Study, Village of Cairo, Hall County, Nebraska, June 1978.

15. Federal Emergency Management Agency, Flood Insurance Study, City of Grand Island, Hall County, Nebraska, March 1983.

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16. ————, Flood Insurance Study, City of Wood River, Hall County, Nebraska, June 1986.

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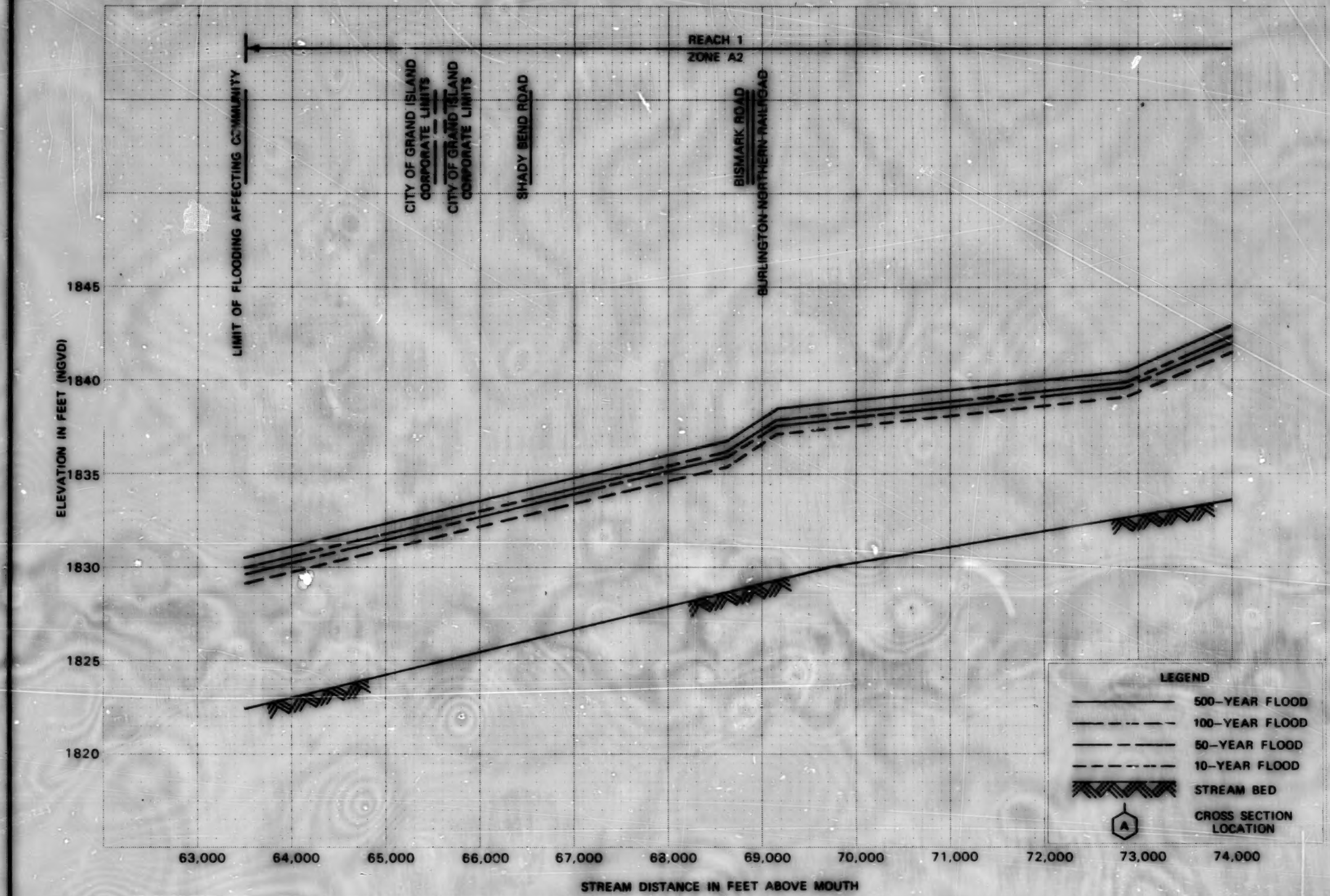


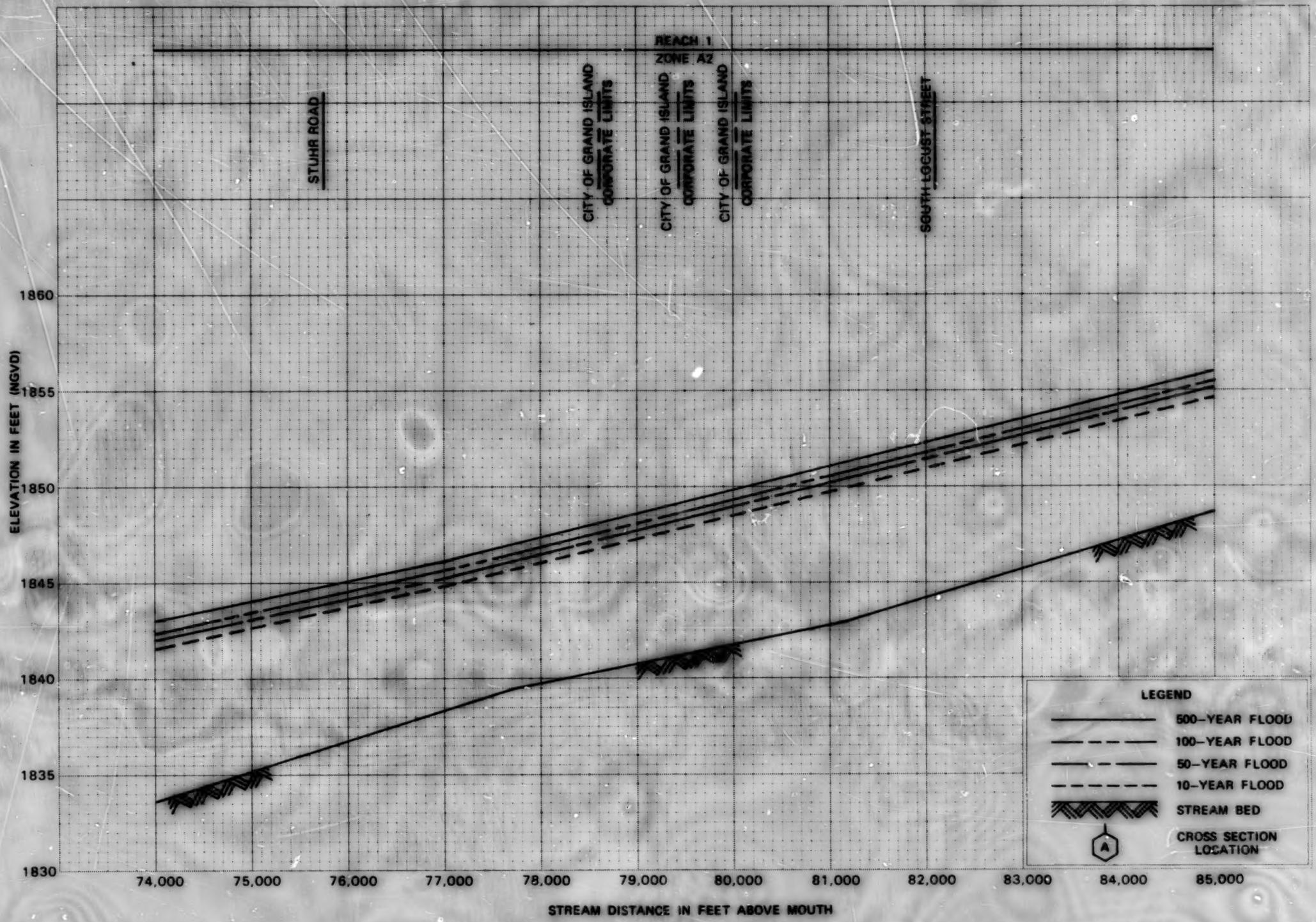
FLOOD PROFILES

WOOD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

01P



FLOOD PROFILES

WOOD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

02P

FLOOD PROFILES

WOOD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

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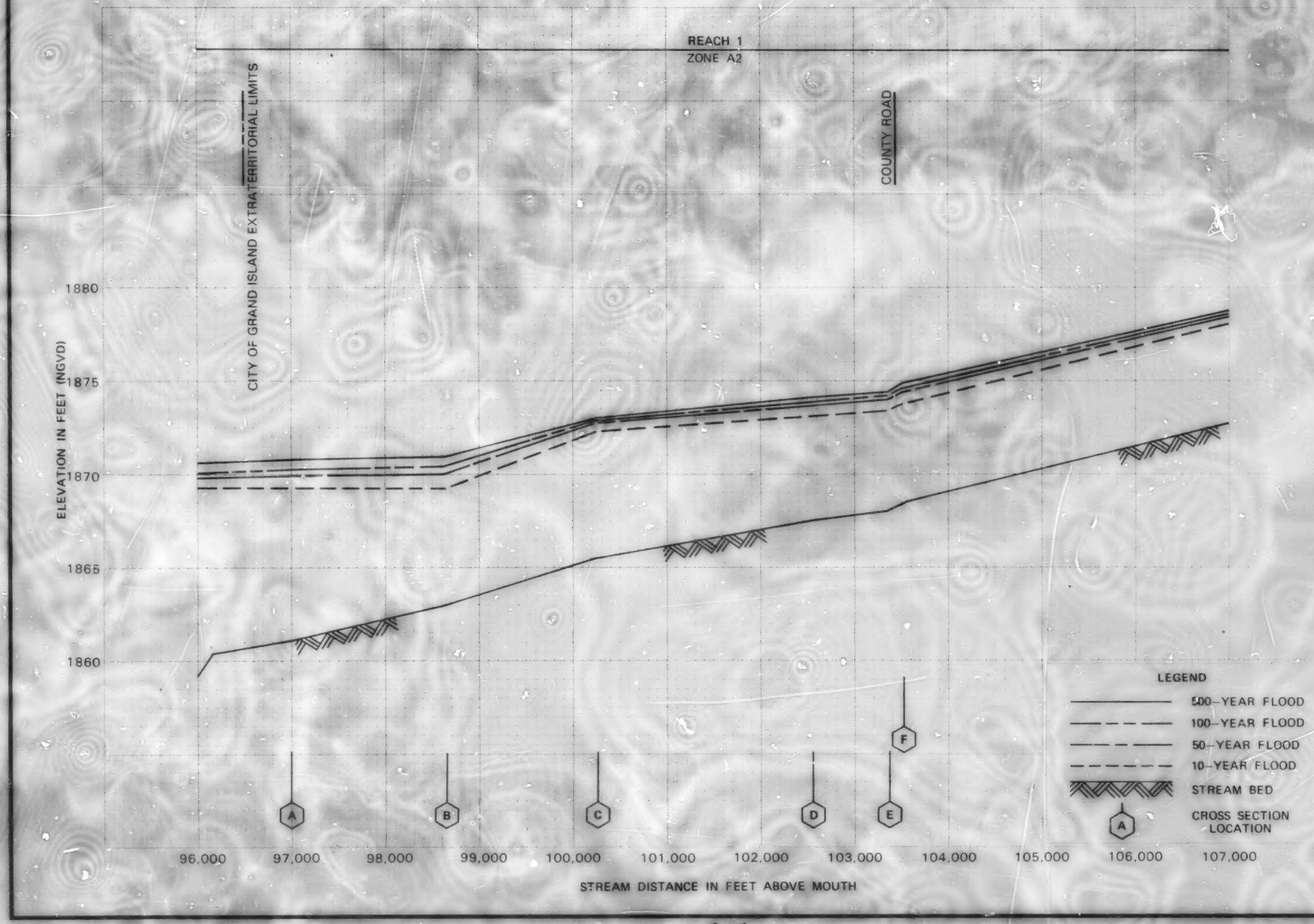

FLOOD PROFILES

WOOD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

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REACH 1
ZONE A2

REACH 2
ZONE A3

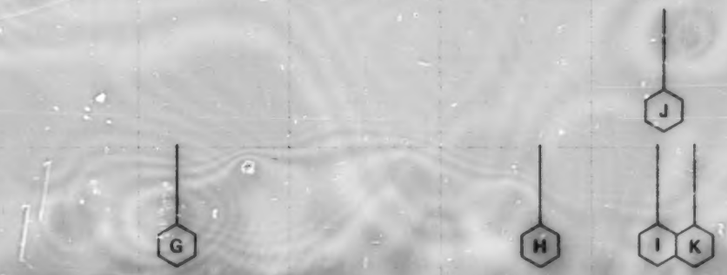
COUNTY ROAD
BRIDGE NO. 1

COUNTY ROAD
BRIDGE NO. 2

CITY OF ALDA
EXTRATERRITORIAL LIMITS

ELEVATION IN FEET (NGVD)

1895
1890
1885
1880
1875
1870



LEGEND

- 500–YEAR FLOOD
- 100–YEAR FLOOD
- 50–YEAR FLOOD
- 10–YEAR FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

107,000 108,000 109,000 110,000 111,000 112,000 113,000 114,000 115,000 116,000 117,000 118,000

STREAM DISTANCE IN FEET ABOVE MOUTH

FLOOD PROFILES

WOOD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

05P

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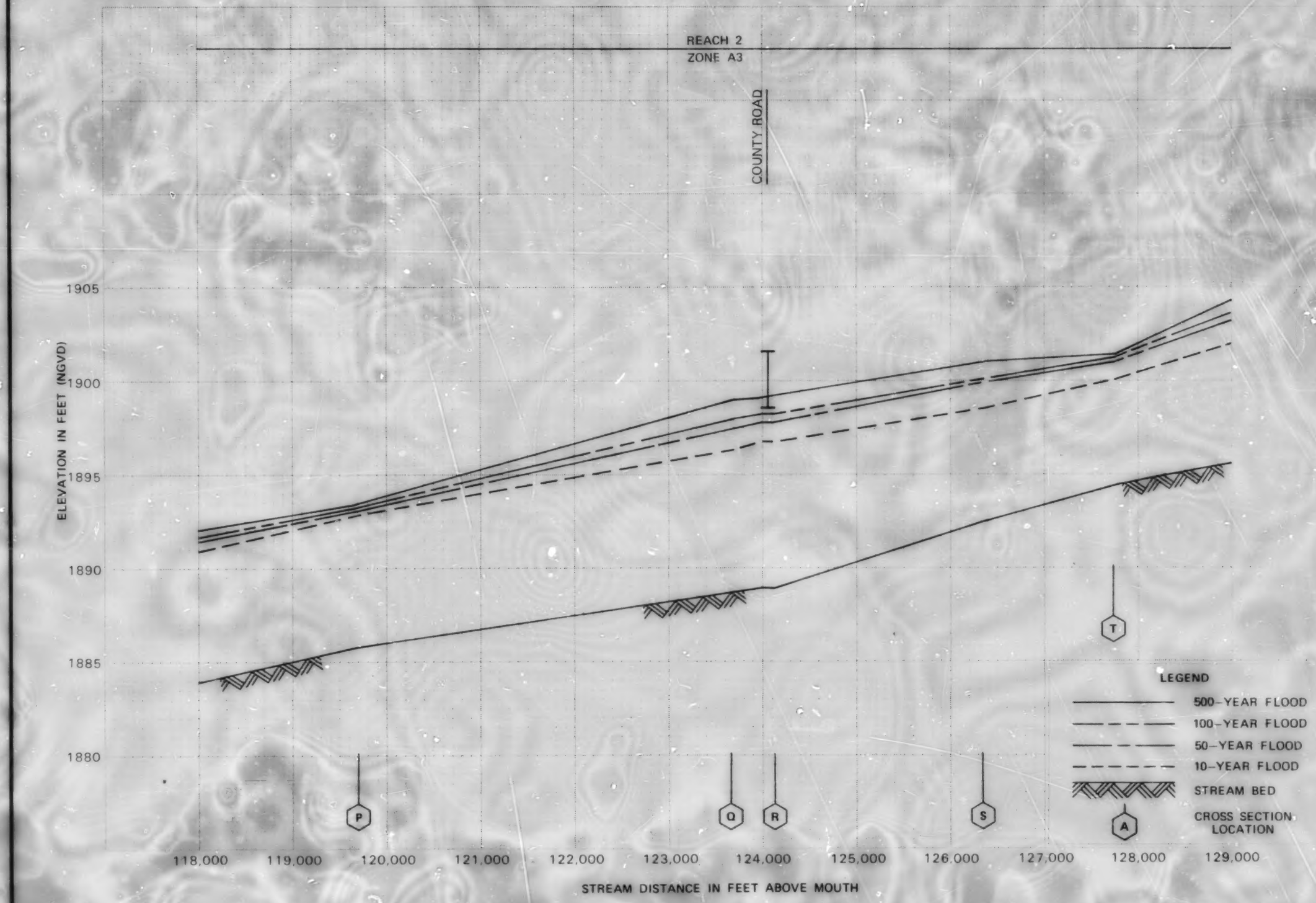

FLOOD PROFILES

WOOD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

06P

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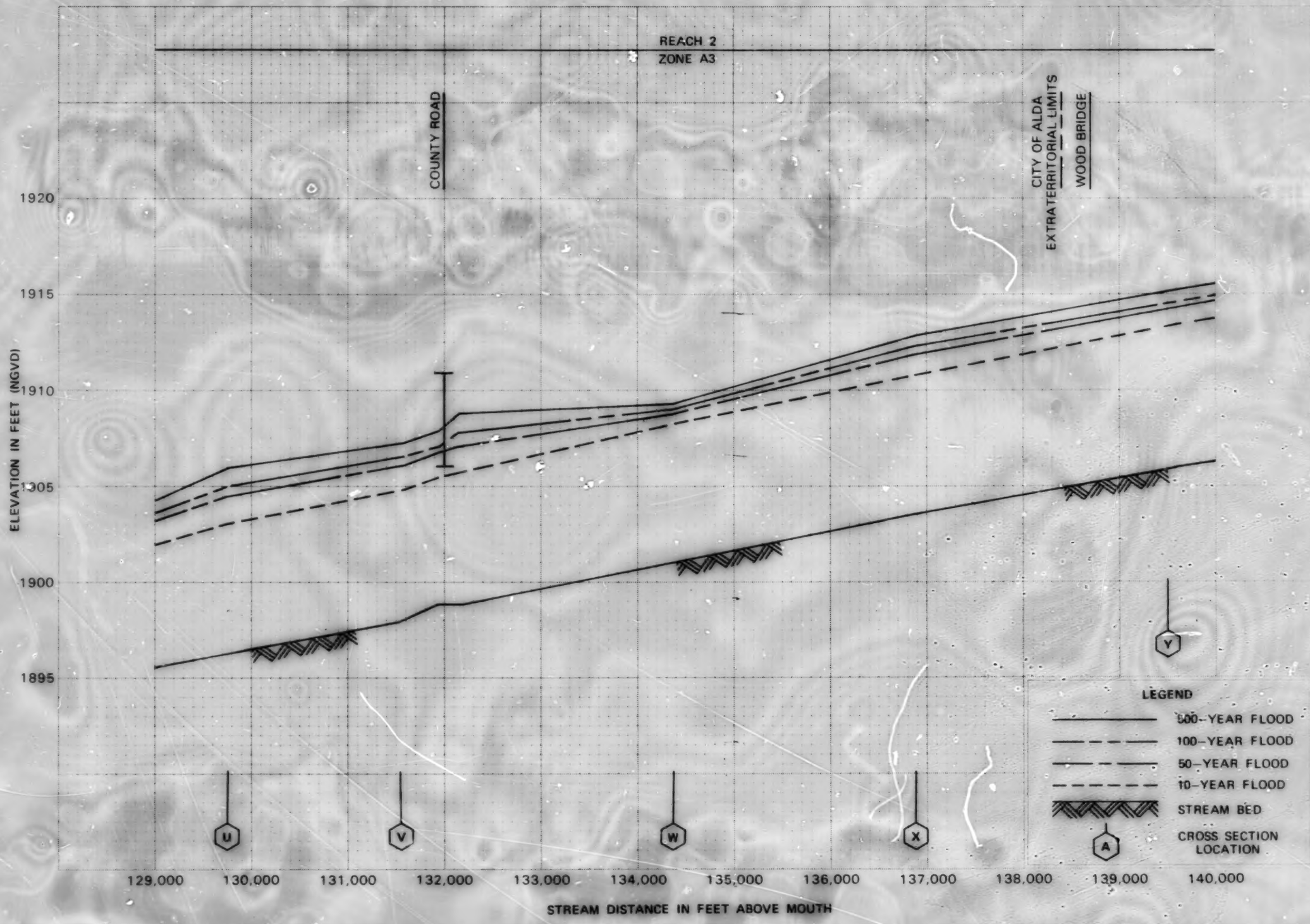

FLOOD PROFILES

WOOD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE.
(UNINCORPORATED AREAS)

07P

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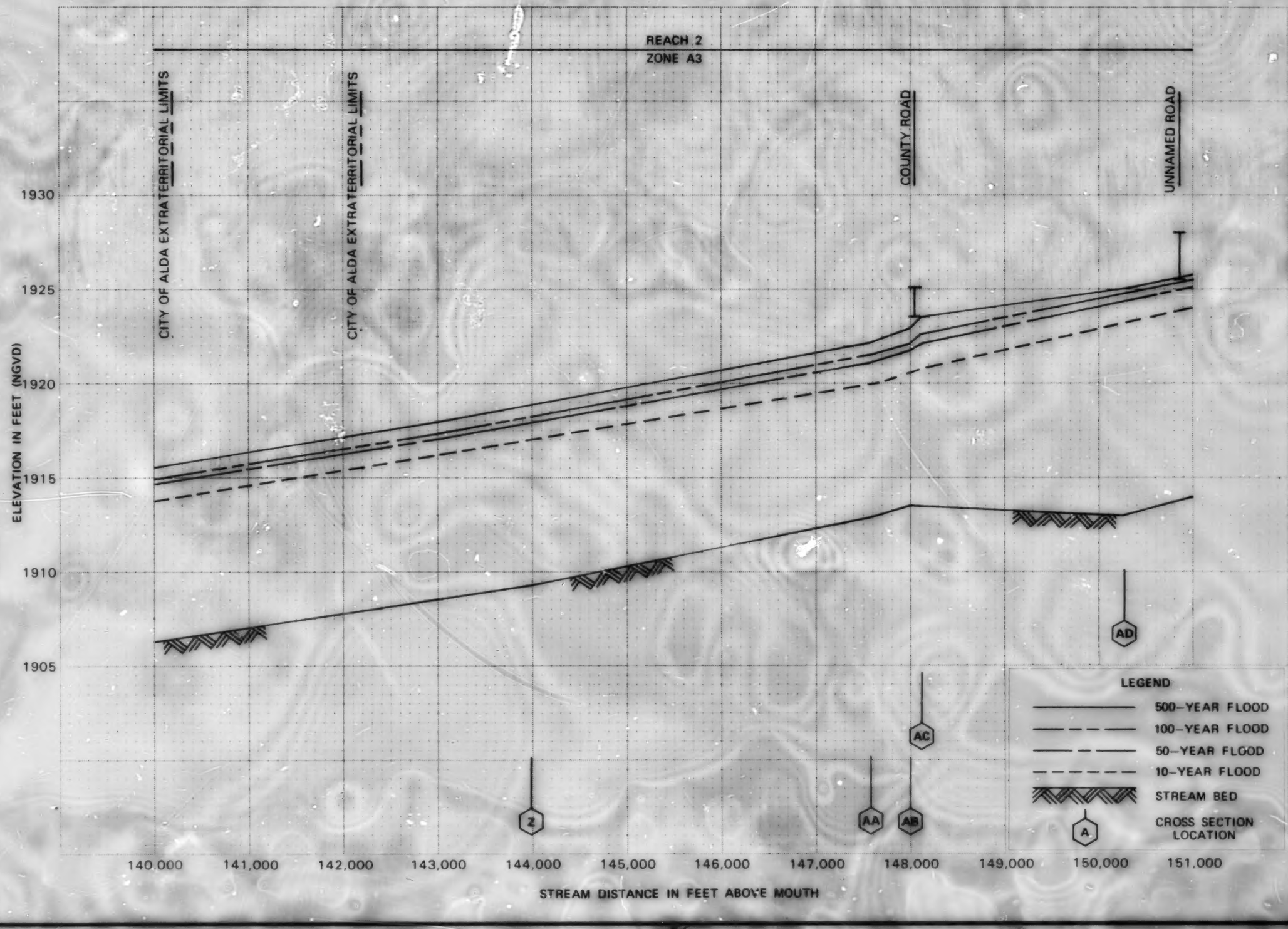


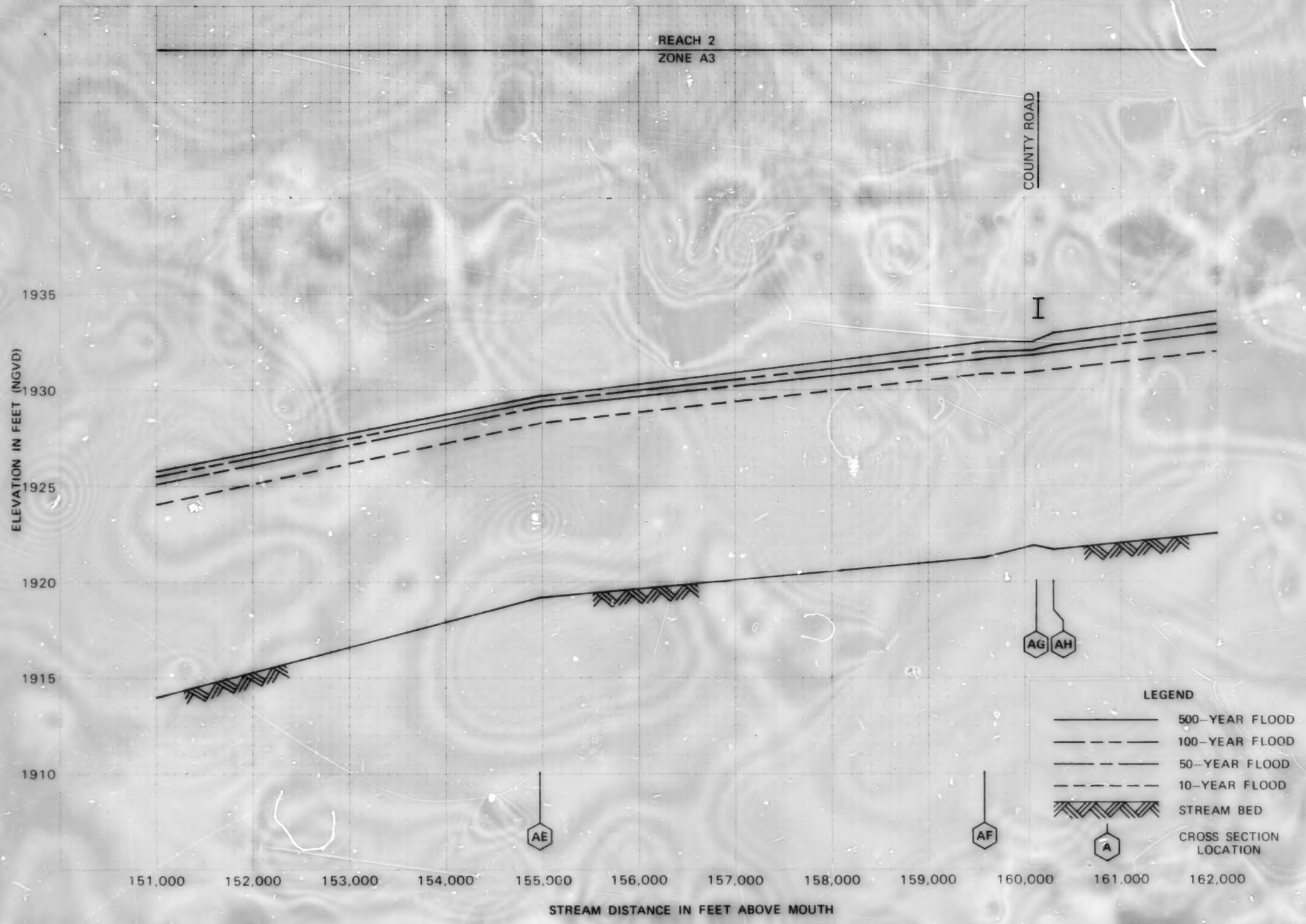
FLOOD PROFILES

WOOD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

08P



FLOOD PROFILES

WOOD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

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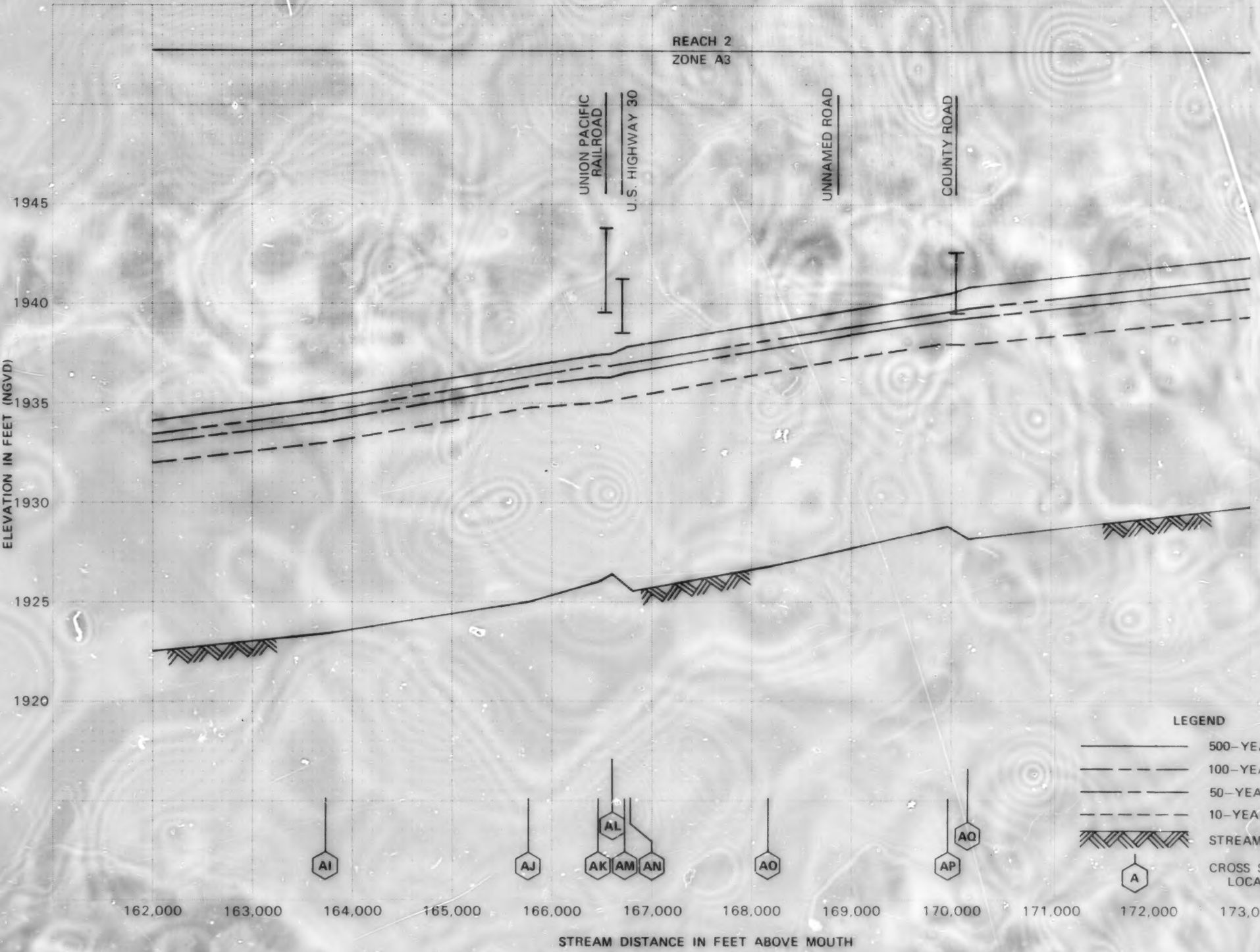


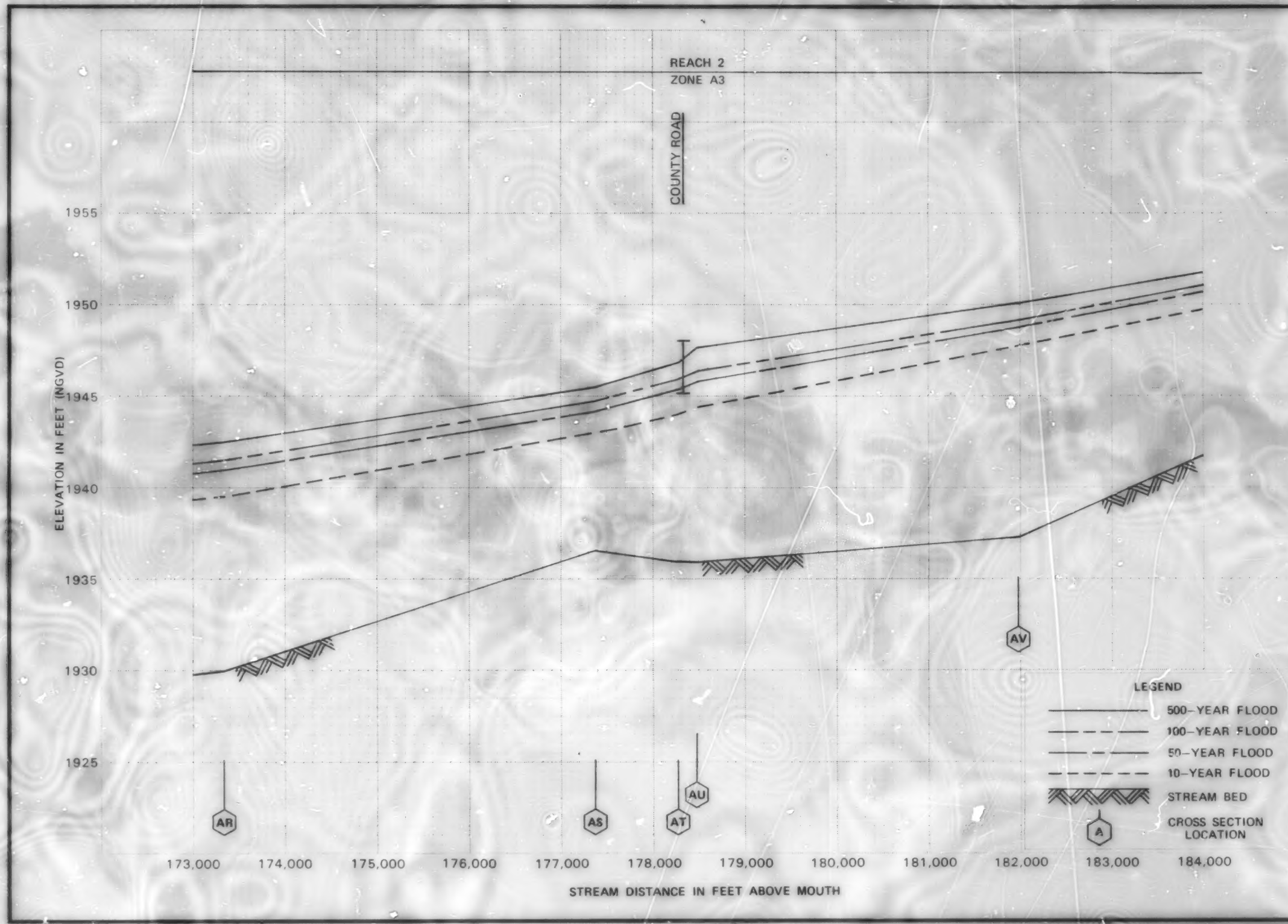
FLOOD PROFILES

WOOD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

10P



FLOOD PROFILES

WOOD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

11P

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FLOOD PROFILES

WOOD RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

12P

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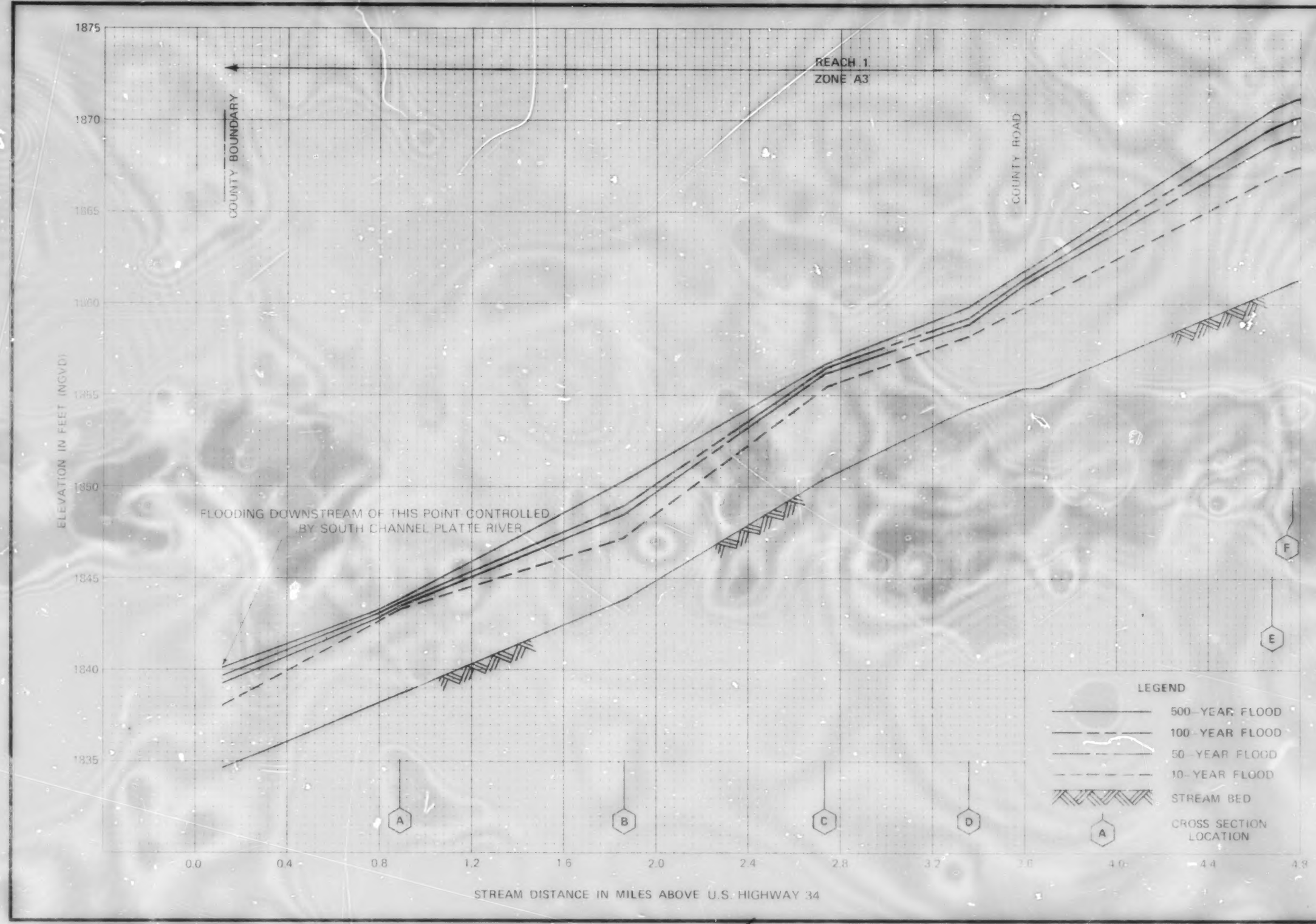

FLOOD PROFILES

MIDDLE CHANNEL PLATTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE

(UNINCORPORATED AREAS)

13P

34

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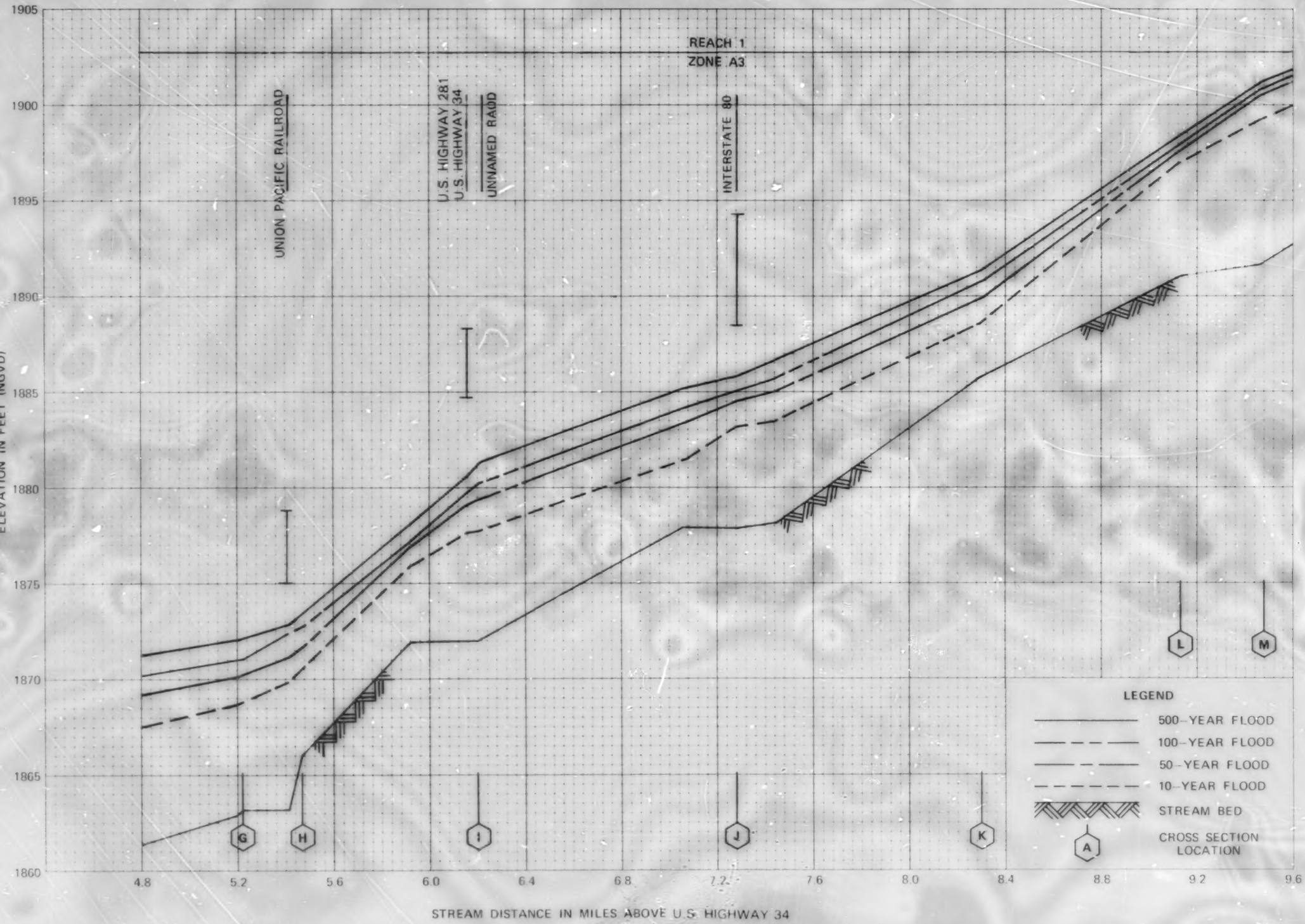

FLOOD PROFILES

MIDDLE CHANNEL PLATTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

14P

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REACH 1
ZONE A3

ELEVATION IN FEET (NGVD)

1935
1930
1925
1920
1915
1910
1905
1900
1895
1890

9.6 10.0 10.4 10.8 11.2 11.6 12.0 12.4 12.8 13.2 13.6 14.0 14.4

STREAM DISTANCE IN MILES ABOVE U.S. HIGHWAY 34

COUNTY ROAD

N D P Q

LEGEND

- 500-YEAR FLOOD
- 100-YEAR FLOOD
- 50-YEAR FLOOD
- 10-YEAR FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

FLOOD PROFILES

MIDDLE CHANNEL PLATTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

15P

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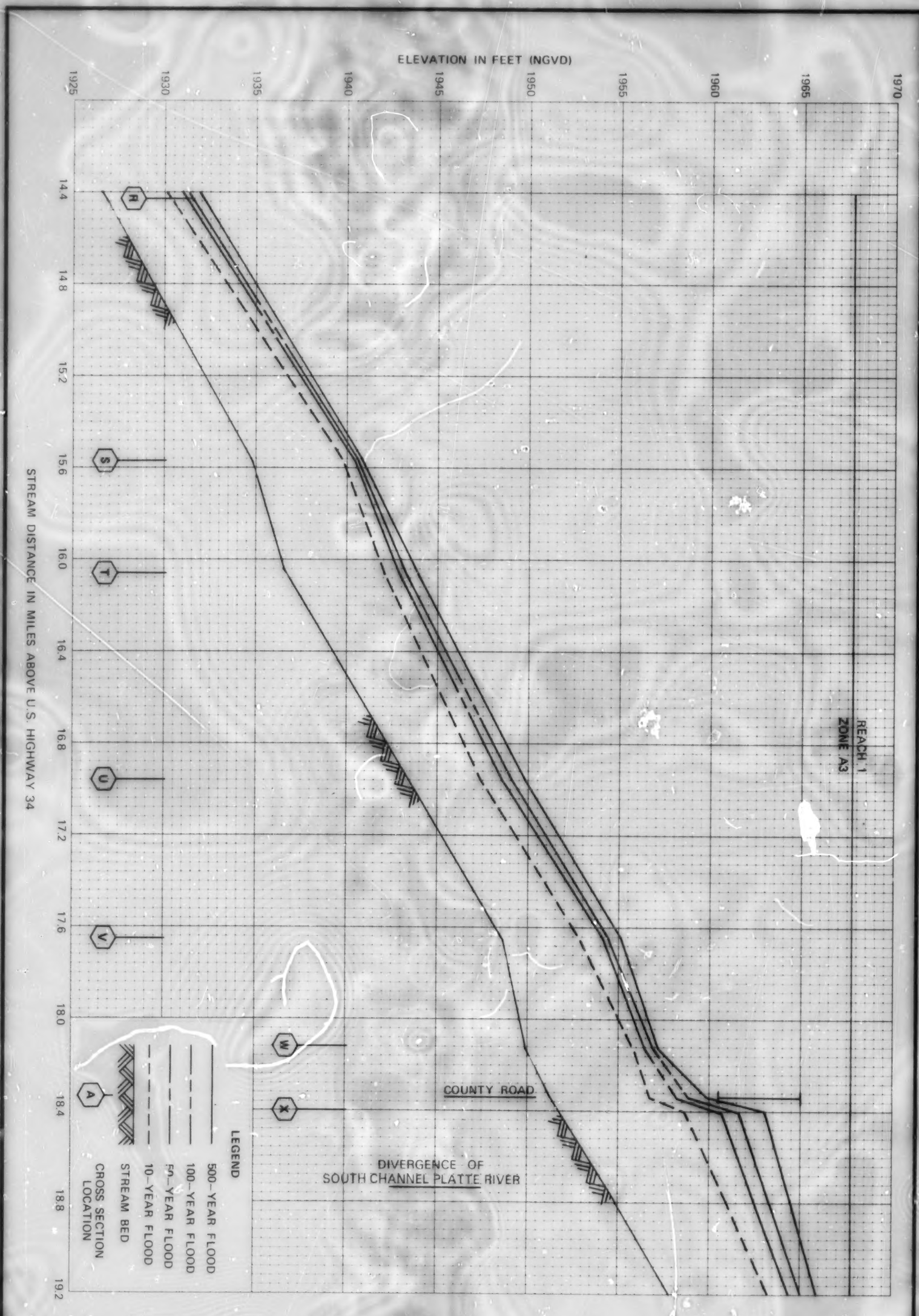


FEDERAL EMERGENCY MANAGEMENT AGENCY

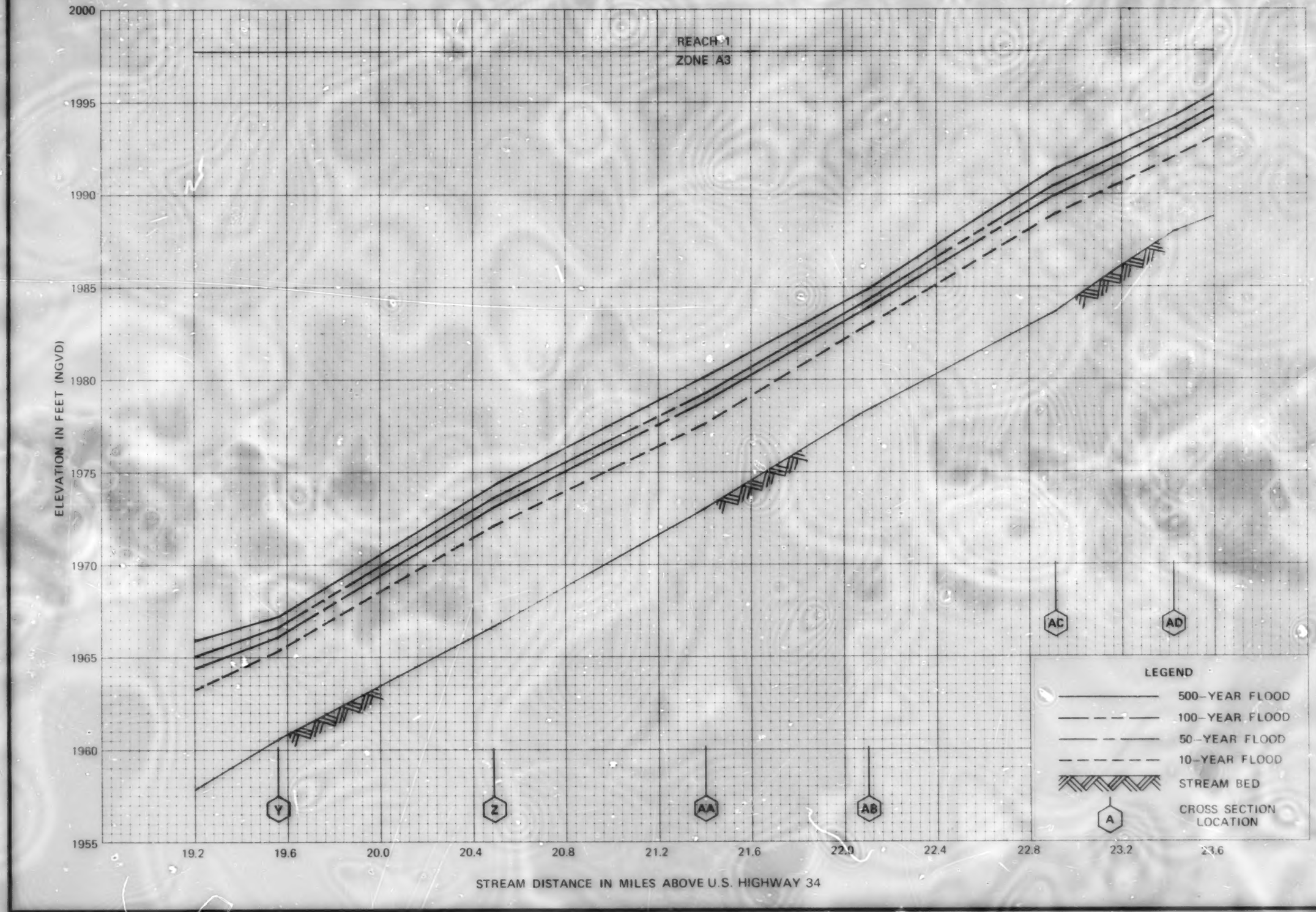
HALL COUNTY, NE

(UNINCORPORATED AREAS)

FLOOD PROFILES

MIDDLE CHANNEL PLATTE RIVER

16P



FLOOD PROFILES

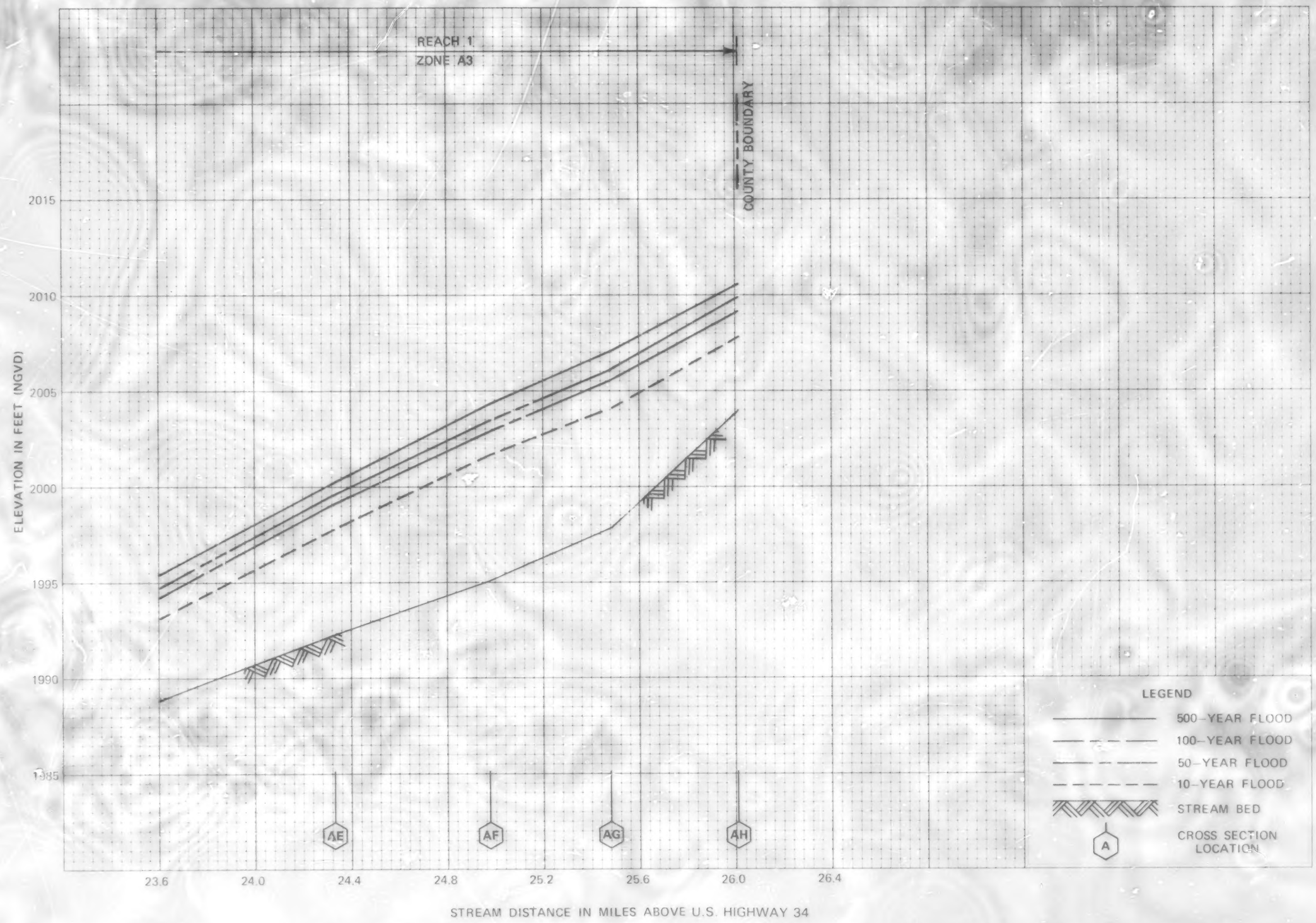
MIDDLE CHANNEL PLATTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE

(UNINCORPORATED AREAS)

17P



FLOOD PROFILES

MIDDLE CHANNEL PLATTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

18P

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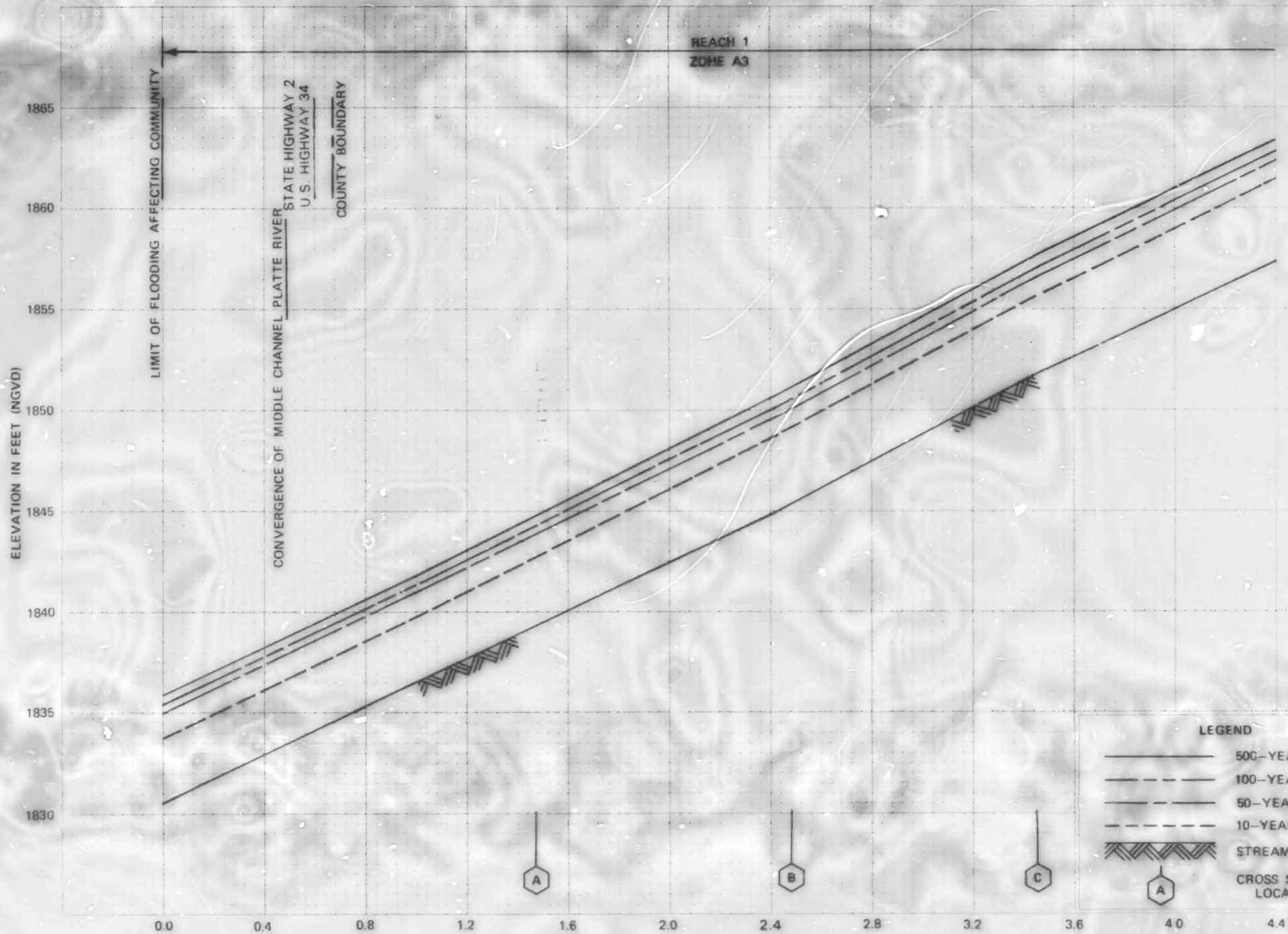


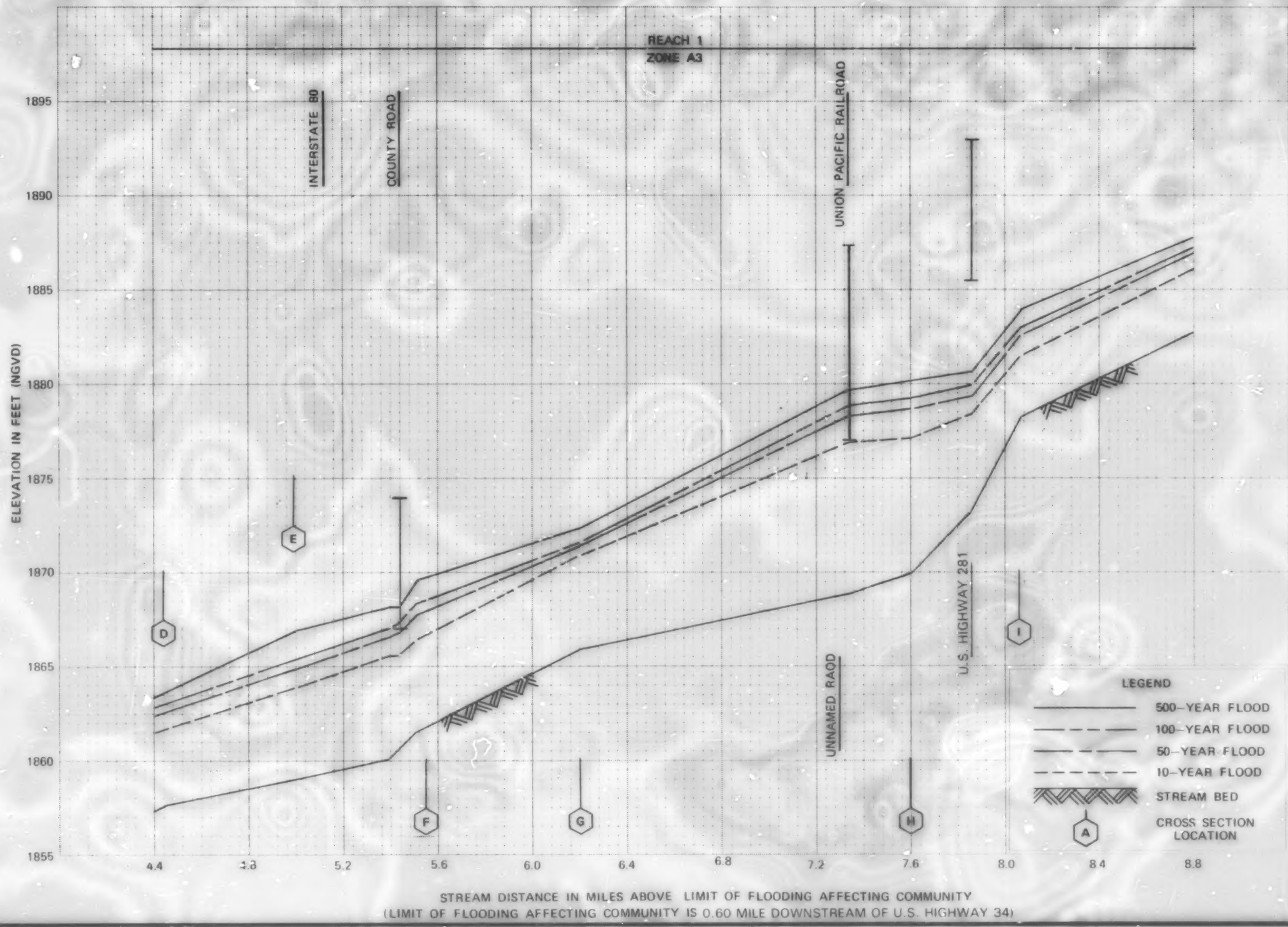
FLOOD PROFILES

SOUTH CHANNEL PLATTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

19P



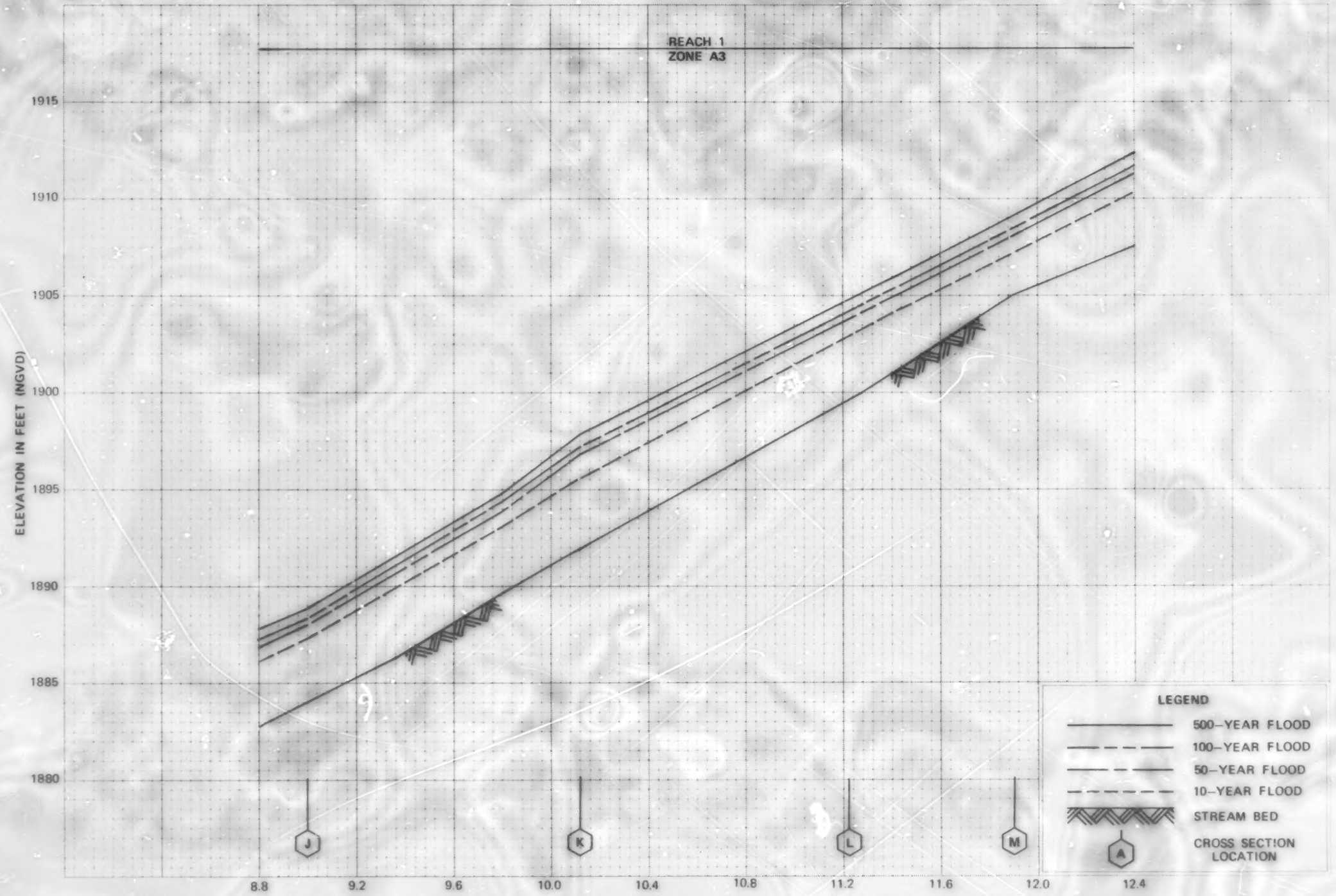
FLOOD PROFILES

SOUTH CHANNEL PLATTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

20P



FLOOD PROFILES

SOUTH CHANNEL PLATTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

21P

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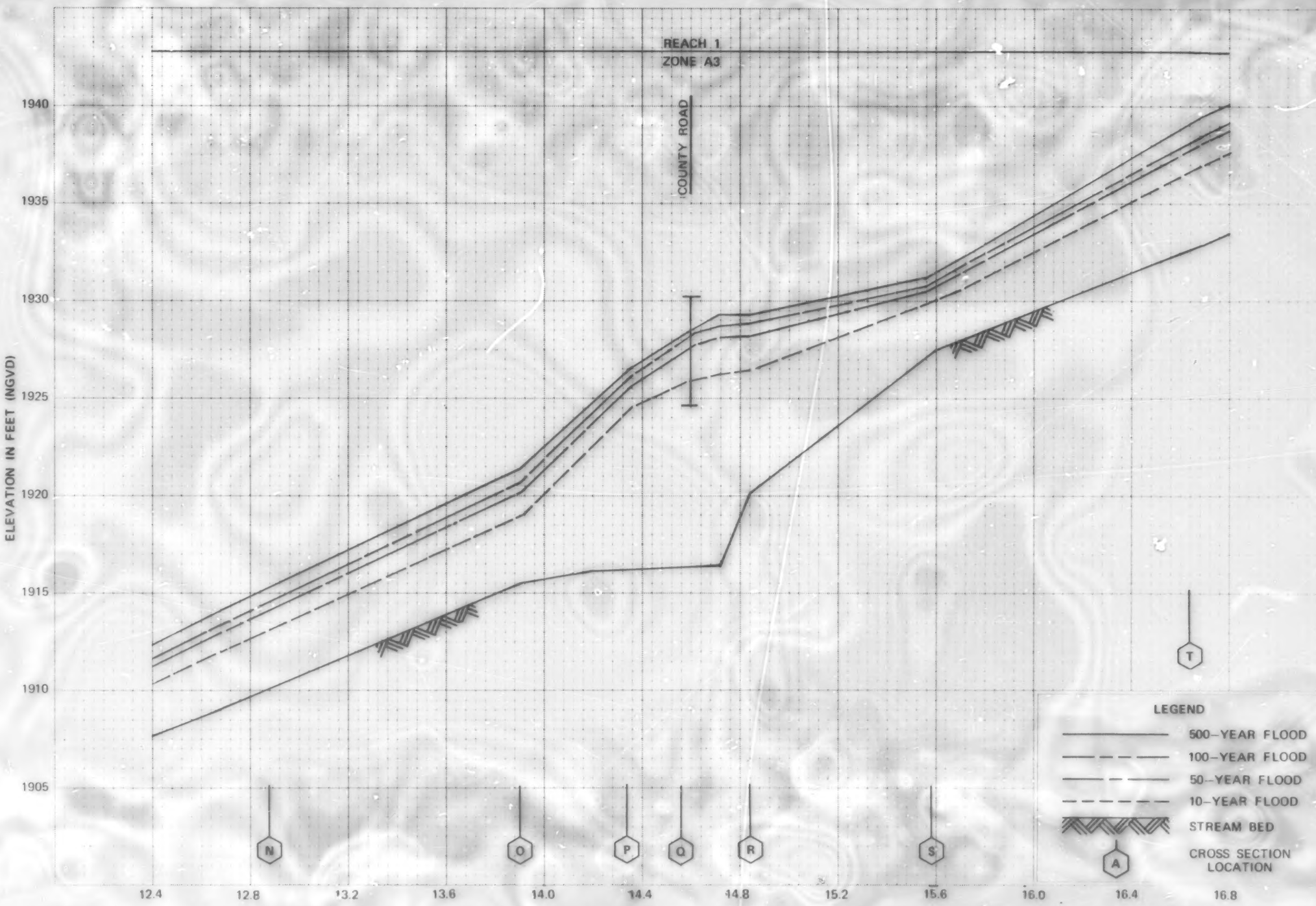

FLOOD PROFILES

SOUTH CHANNEL PLATTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

22P

43

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REACH 1
ZONE A3

ELEVATION IN FEET (NGVD)

1965
1960
1955
1950
1945
1940
1935
1930

COUNTY HIGHWAY 7

DIVERGENCE FROM MIDDLE CHANNEL PLATTE RIVER

X
Y
U
V
W

LEGEND

- 500–YEAR FLOOD
- 100–YEAR FLOOD
- 50–YEAR FLOOD
- 10–YEAR FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

16.8 17.2 17.6 18.0 18.4 18.8 19.2 19.6 20.0 20.4 20.8

STREAM DISTANCE IN MILES ABOVE LIMIT OF FLOODING AFFECTING COMMUNITY
(LIMIT OF FLOODING AFFECTING COMMUNITY IS 0.60 MILE DOWNSTREAM OF U.S. HIGHWAY 34)

FLOOD PROFILES

SOUTH CHANNEL PLATTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

23P

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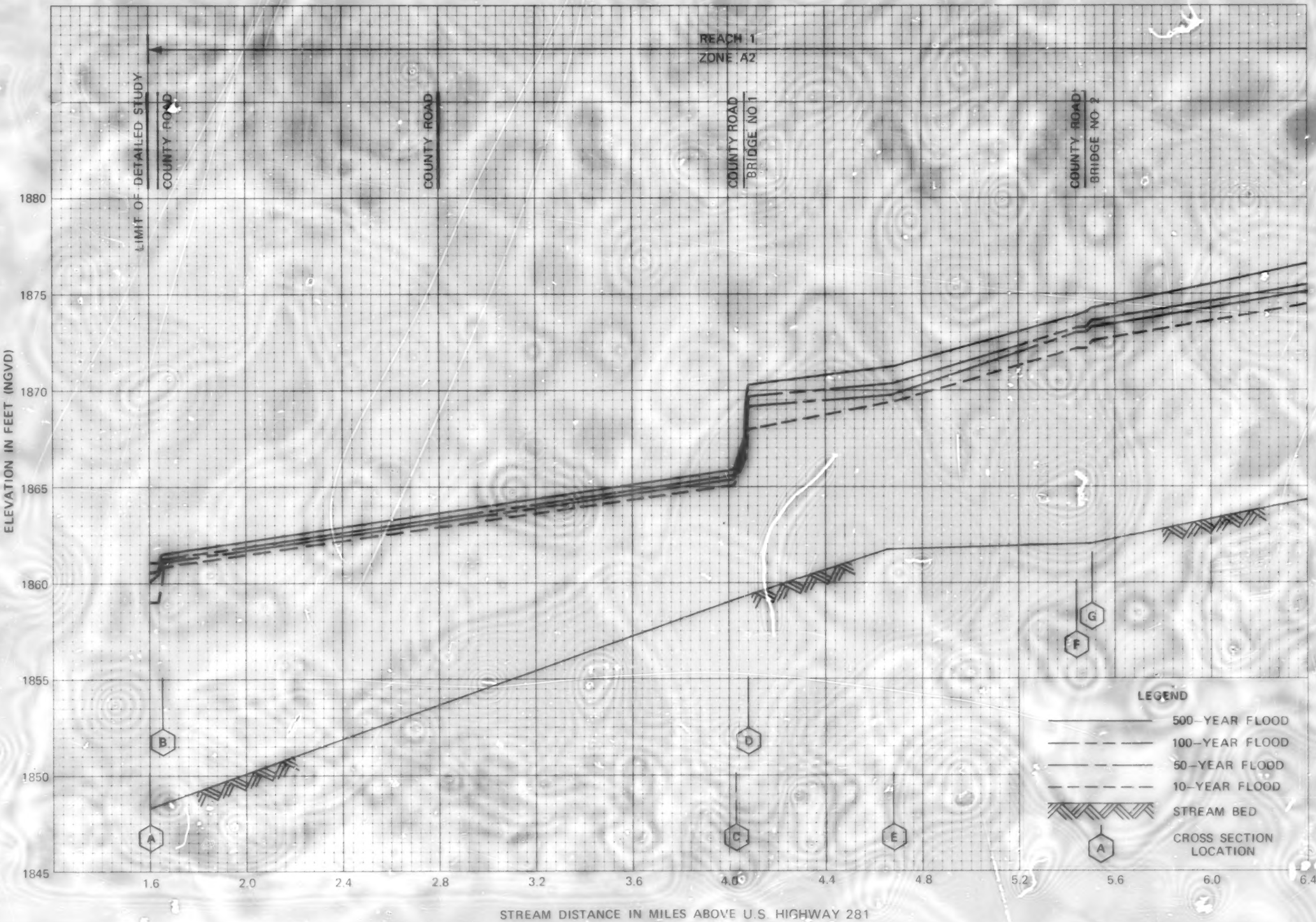


FLOOD PROFILES

PRAIRIE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE

(UNINCORPORATED AREAS)

24P

45

REACH 1
ZONE A2

COUNTY ROAD
BRIDGE NO 3

COUNTY ROAD
BRIDGE NO 4

ELEVATION IN FEET (NGVD)

1895
1890
1885
1880
1875
1870
1865
1860

6.4 6.8 7.2 7.6 8.0 8.4 8.8 9.2 9.6 10.0 10.4 10.8

STREAM DISTANCE IN MILES ABOVE US HIGHWAY 281

H I J K L M N

LEGEND

- 500-YEAR FLOOD
- 100-YEAR FLOOD
- 50-YEAR FLOOD
- 10-YEAR FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

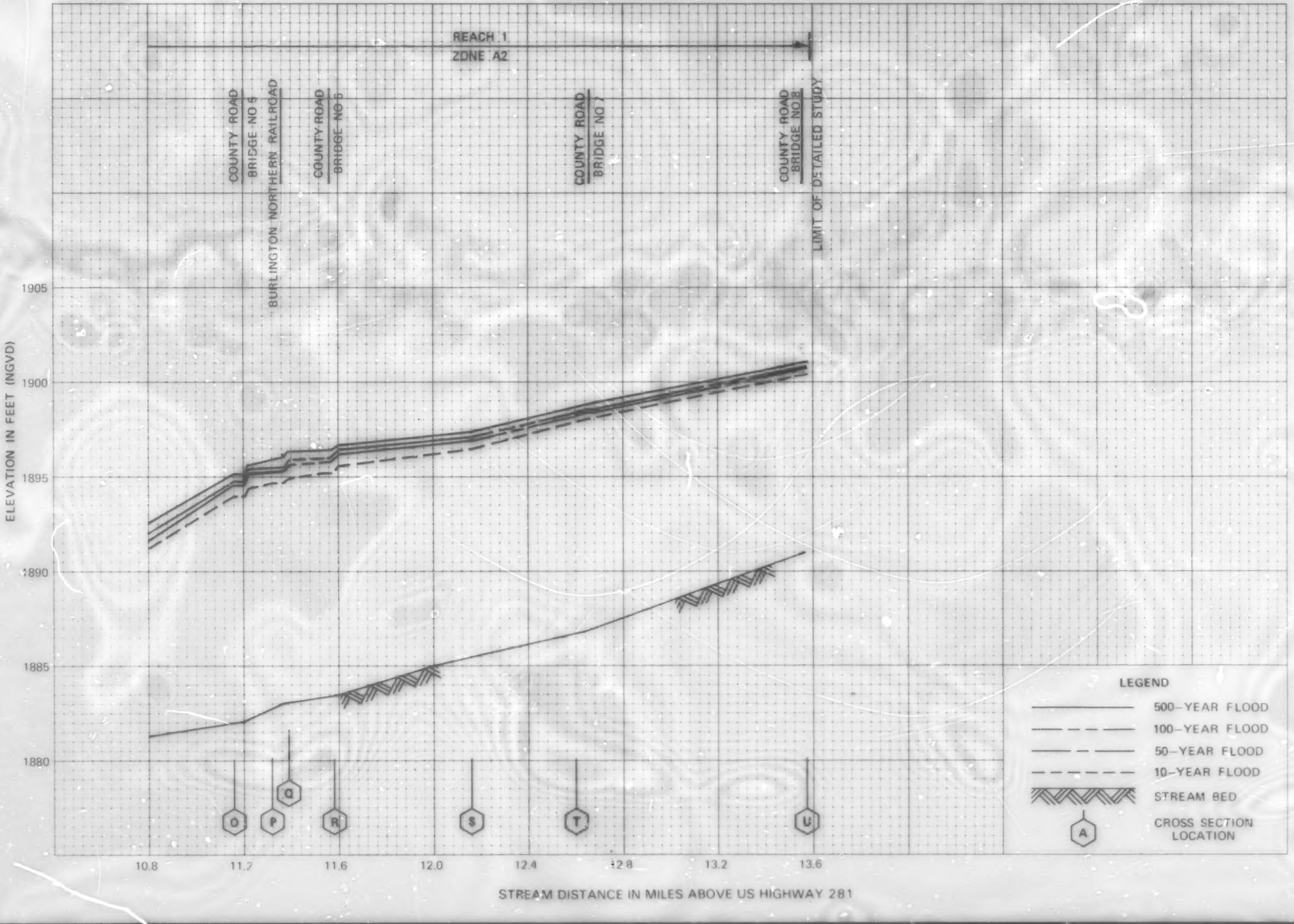
FLOOD PROFILES

PRAIRIE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

25P



FLOOD PROFILES

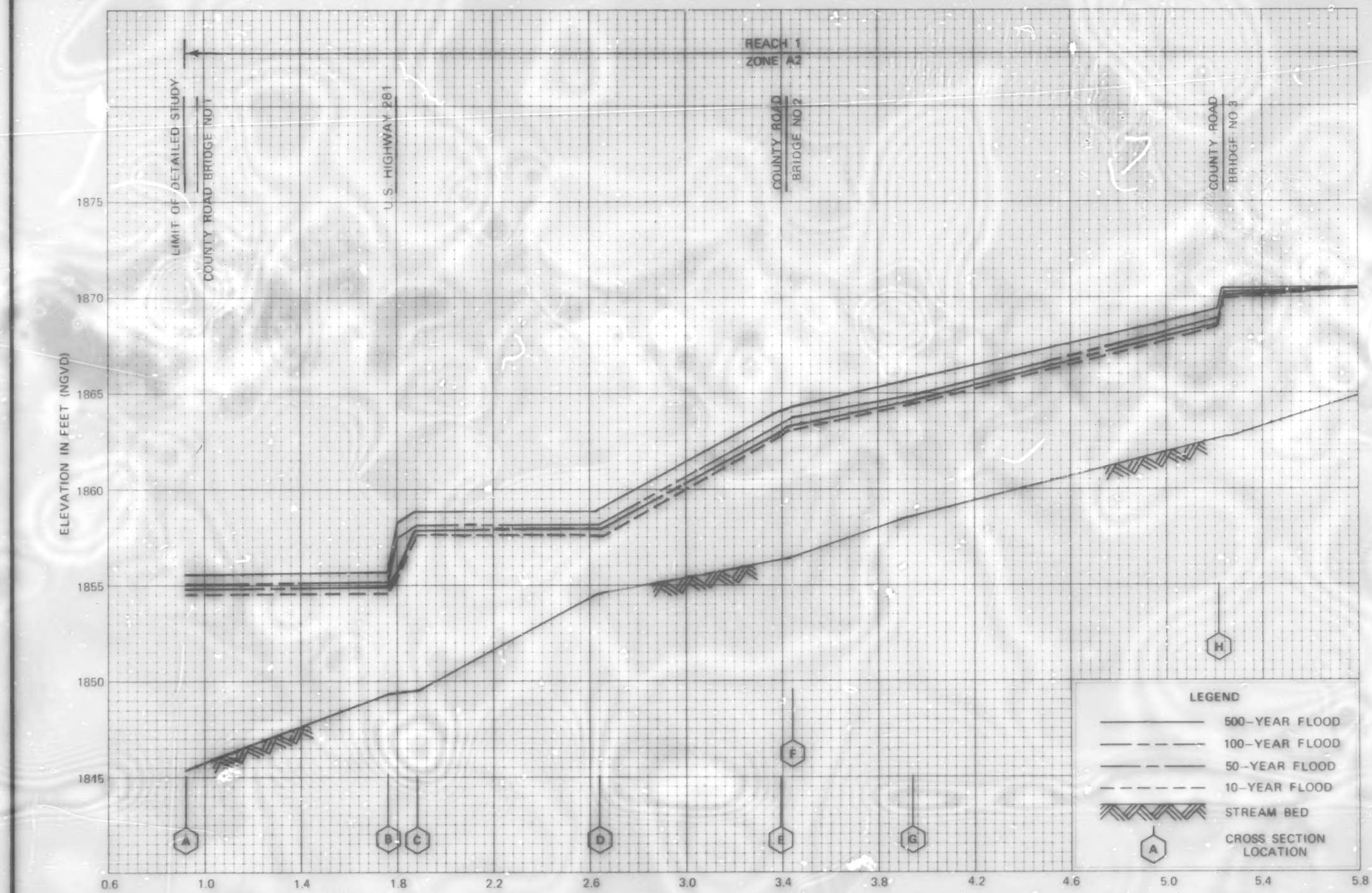
PRAIRIE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE

(UNINCORPORATED AREAS)

26P



FLOOD PROFILES

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

27P

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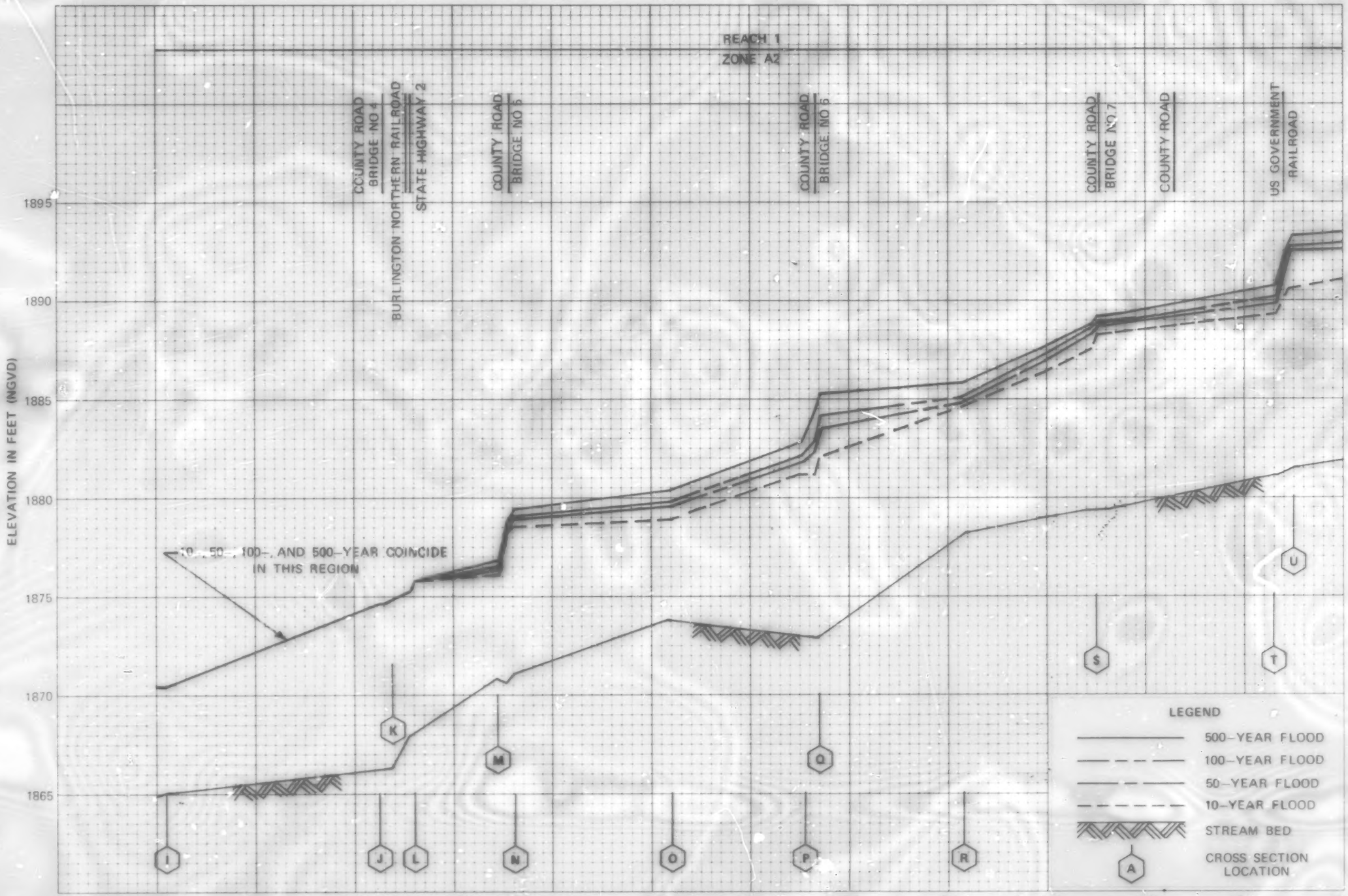


FLOOD PROFILES

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE

(UNINCORPORATED AREAS)

28P

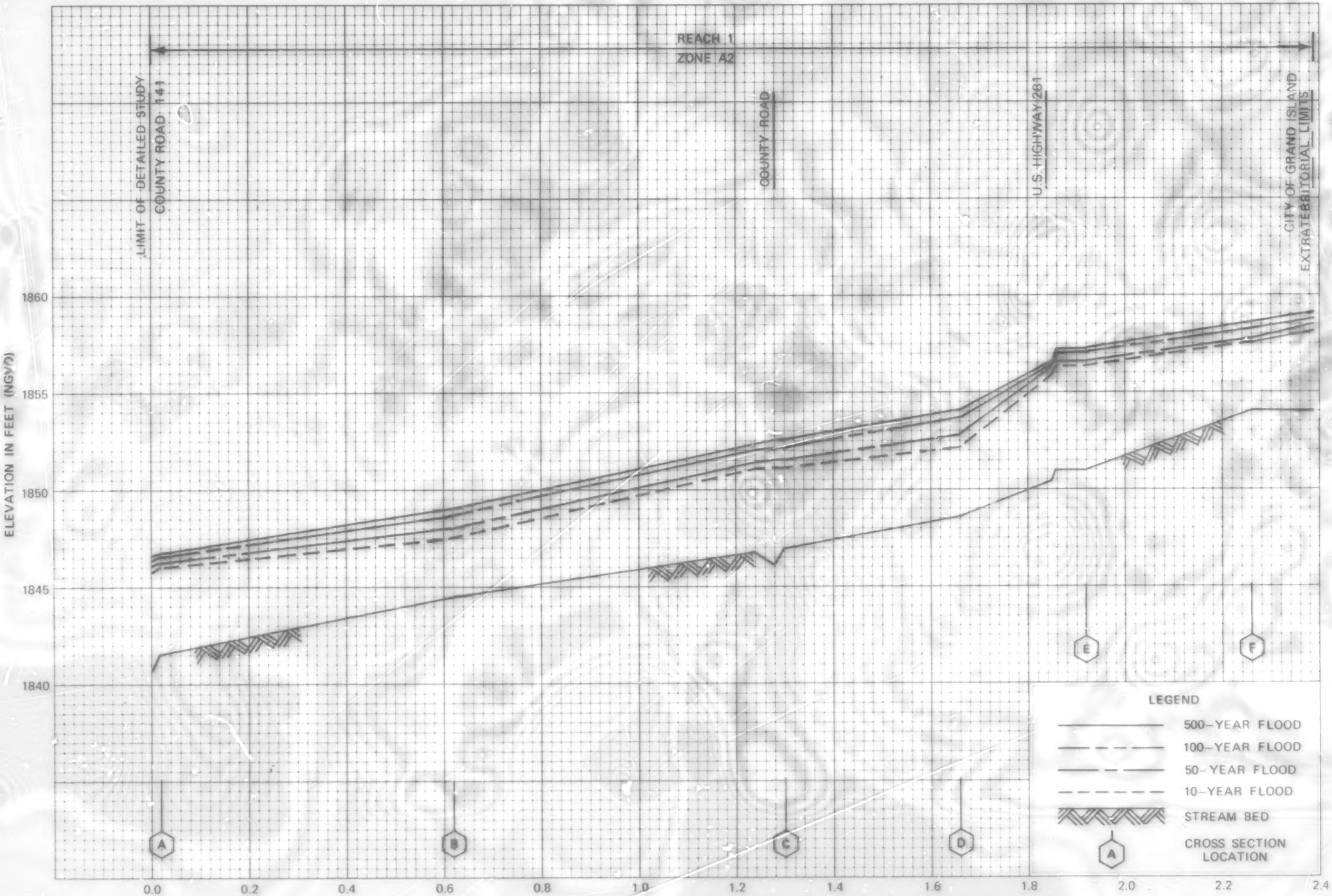
FLOOD PROFILES

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

29P



FLOOD PROFILES

MOORES CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

HALL COUNTY, NE
(UNINCORPORATED AREAS)

30P